

REPORT
OF THE
Health Department
OF
The Panama Canal
FOR THE
CALENDAR YEAR
1924

Gift of the Panama Canal Museum



W. P. CHAMBERLAIN
Colonel, Medical Corps, United States Army
Chief Health Officer

THE PANAMA CANAL PRESS
MOUNT HOPE, C. Z.
1925

REPORT
OF THE
Health Department
OF
The Panama Canal
FOR THE
CALENDAR YEAR
1924



W. P. CHAMBERLAIN
Colonel, Medical Corps, United States Army
Chief Health Officer

THE PANAMA CANAL PRESS
MOUNT HOPE, C. Z.
1925



For additional copies of this publication address The Panama Canal, Washington, D. C., or Balboa Heights, Canal Zone.

CONTENTS.

	Page.
Title.....	1
Vital statistics regarding employees only.....	6
Vital statistics for the Canal Zone, employees and nonemployees.....	8
Vital statistics for Panama City, employees and nonemployees.....	8
Vital statistics for Colon, employees and nonemployees.....	10
Malaria.....	11
Mosquito control.....	12
Garbage disposal and fly prevention.....	14
Infant mortality.....	15
Child health education and child hygiene.....	15
Physical examination of school children.....	16
Diseases of animals.....	17
Quarantine Division.....	19
Ancon Hospital.....	20
Corozal Hospital.....	22
Colon Hospital.....	24
Santo Tomas Hospital.....	25
Palo Seco Leper Colony.....	25
Board of Health Laboratory.....	28
Tables.....	41

LETTER OF TRANSMITTAL

THE PANAMA CANAL, HEALTH DEPARTMENT,
BALBOA HEIGHTS, C. Z., *May 1, 1925.*

Colonel M. L. WALKER,
*Governor, The Panama Canal,
Balboa Heights, Canal Zone.*

SIR: I have the honor to submit the following report of the operations of the Health Department for the calendar year 1924.

Respectfully,

W. P. CHAMBERLAIN,
Chief Health Officer.

HEALTH DEPARTMENT.

OPERATION AND ORGANIZATION.

The operation and organization of the Health Department is the same as described in the Report for the Calendar Year 1923.

PERSONNEL.

The personnel employed by the Health Department is the same as that shown in the Report of the Calendar Year 1923, with the following exceptions:

Col. Weston P. Chamberlain, Medical Corps, U. S. Army, became Chief Health Officer, replacing Col. Henry C. Fisher, Medical Corps, U. S. Army, who was relieved from duty with The Panama Canal, effective June 22, 1924.

Surgeon Carlisle P. Knight, U. S. P. H. S., became Chief Quarantine Officer, replacing Surgeon W. C. Rucker, U. S. P. H. S., who was relieved from duty with The Panama Canal, effective April 30, 1924.

Maj. Tom S. Mebane, Medical Corps, U. S. Army, became Superintendent, Colon Hospital, replacing Maj. Thomas J. Leary, Medical Corps, U. S. Army, who was relieved from duty with The Panama Canal, effective June 22, 1924.

The personnel of Santo Tomas Hospital, Panama, ceased to be under the jurisdiction of The Panama Canal, effective September 1, 1924.

The internes at Ancon Hospital completed their internships in June and July, 1924, and were replaced by Dr. Edward Peyser, Dr. Eugene G. Free, Dr. Norman T. North, Dr. Elmer J. Wenaas, Dr. Richard M. Hewitt, Dr. W. B. Spalding, Dr. Thomas M. Arrasmith, and Dr. Dewey E. Westerman. The service of the last named was terminated August 11, 1924.

The following physicians were employed during the year, by detail from the Medical Corps of the Army or by selection through the Civil Service Commission: Maj. William W. Conger, Maj. William A. Murphy, Capt. Frank W. Romaine, Capt. Paul G. Capps, Dr. Harry E. Handley, Dr. Walter C. Friday, Dr. Herbert L. Phillips, Dr. Boldridge E. Kneece.

The following physicians were separated from the service during the year: Dr. William B. Meares, Dr. Julian R. Hunt, and Dr. William J. Burke.

Dr. Claire C. Clay, Veterinarian and Meat Inspector, replaced Dr. William F. Gross who resigned June 14, 1924.

SUMMARY OF VITAL¹ STATISTICS REGARDING EMPLOYEES ONLY.²

The admission rate to hospitals and quarters, from all causes, has been as follows:

Year.	Average number employed.	Rate.	
1906	26,547	1,779	
1907	39,238	1,419	
1908	43,890	1,132	
1909	47,167	887	
1910	50,802	905	
1911	48,876	896	
1912	50,893	727	
1913	56,654	519	
1914	44,329	420	
1915	34,785	320	
1916	33,176	283	
1917	32,589	357	
1918	25,520	406	
1919	24,204	550	
1920	20,673	672	
1921	14,389	620	
1922	10,447	490	
1923	10,976	485	
1924	11,625	513	

From disease alone the admission rate to hospitals in 1924 was 130.32, as compared with 133.48 in 1923, and 139.47 in 1922. The total admission rate to hospitals only was 151.57 in 1924, as compared with 155.90 in 1923, and 167.61 in 1922.

The death rate, from all causes, has been:

Year.	Average number employed.	Rate.	
1906	26,547	41.73	
1907	39,238	28.74	
1908	43,890	13.01	
1909	47,167	10.64	
1910	50,802	10.98	
1911	48,876	11.02	
1912	50,893	9.18	
1913	56,654	8.35	
1914	44,329	7.04	
1915	34,785	5.77	
1916	33,176	6.03	
1917	32,589	7.09	
1918	25,520	8.11	
1919	24,204	7.23	
1920	20,673	8.70	
1921	14,389	6.46	
1922	10,447	6.89	
1923	10,976	6.65	
1924	11,625	7.23	

¹ All rates throughout this report are computed as annual per 1,000.

² Includes all employees of The Panama Canal and the Panama Railroad on the Isthmus; that is, in the Canal Zone, and cities of Colon and Panama.

Active sanitary work on the Canal Zone and in the cities of Colon and Panama was undertaken by the United States soon after the control of the property of the French Canal Company was taken over in May, 1904. Tables are therefore carried as far back toward that date as figures are available, to give a comparison of the results of work done since.

The death rate from disease alone for 1924 was 5.51, as compared with 6.10 in 1923, and 6.13 in 1922.

The noneffective rate, from all causes, has been:

Year.	Average number employed.	Rate.	
1906	26,547	28.48	
1907	39,238	25.09	
1908	43,890	22.31	
1909	47,167	21.93	
1910	50,802	24.37	
1911	48,876	24.46	
1912	50,893	21.11	
1913	56,654	15.97	
1914	44,329	12.22	
1915	34,785	10.28	
1916	33,176	9.20	
1917	32,589	9.65	
1918	25,520	11.19	
1919	24,204	14.29	
1920	20,673	14.87	
1921	14,389	13.96	
1922	10,447	14.81	
1923	10,976	13.78	
1924	11,625	13.51	

The 6 diseases causing the highest number of hospital admissions, with their rates, were as follows:

	1923.		1924.	
	Admissions.	Rate.	Admissions.	Rate.
Venereal diseases.....	189	17.22	194	16.99
Malaria.....	212	19.31	190	16.34
Diseases of the eyes and their annexa.....	93	8.47	83	7.14
Bronchitis (acute and chronic).....	37	3.37	41	3.53
Tuberculosis (various organs).....	23	2.10	28	2.41
Nephritis (acute and chronic).....	26	2.37	24	2.06

The 6 diseases causing the highest number of deaths, with their rates, were as follows:

	1923.		1924.	
	Deaths.	Rate.	Deaths.	Rate.
Tuberculosis (various organs).....	9	0.82	12	1.03
Nephritis (acute and chronic).....	9	.82	7	.60
Organic diseases of the heart.....	8	.73	6	.52
Cancer (various organs).....	4	.36	6	.52
Pneumonia (broncho and lobar).....	7	.64	5	.43
Apoplexy.....	3	.27	5	.43

The admission rate to hospitals from disease, and death rate from disease, for white employees, were 178.07 and 4.26 respectively, as compared with 113.29 and 5.95 for black employees.

The death rate from disease for American (white) employees was 4.14, as compared with 4.87 for 1923, and 3.27 for 1922.

SUMMARY OF VITAL STATISTICS FOR THE CANAL ZONE— EMPLOYEES AND NONEMPLOYEES.

From an average population of 33,723 in the Canal Zone, there were 305 deaths during the year; 270 of these were from disease, giving a rate of 8.01, as compared with 7.14 for 1923, and 7.08 for 1922.

The death rate from tuberculosis was 1.01, as compared with 0.69 for 1923, 0.74 for 1922, and 0.64 for 1921. Tuberculosis caused 13 per cent of all deaths from disease during the year.

There were 694 live births reported during the year, giving a birth rate of 20.58. (See Table VII, page 51). Of these, 255 were white, and 439 were black. Of the total births reported, 5 per cent were stillbirths.

Deaths among children under 1 year of age, from all causes, totaled 67, of which 12 were white and 54 were black, giving an infant mortality rate, based on the number of live births reported during the year, of 47.06 for white children, 123.01 for black children, and a general average of 96.54.

Of the total deaths for all ages, 22 per cent occurred among children under 1 year of age, and 37 per cent among children under 5 years of age.

Below is a table showing the death rates for the Canal Zone from 1905 to 1924, from all causes:

Year.	Popula- tion.	Deaths.	Rate.	
1905	23,463	828	35.29	
1906	34,095	1,700	49.86	
1907	54,036	1,708	31.60	
1908	67,146	1,273	18.95	
1909	76,900	1,025	13.33	
1910	86,465	1,251	14.47	
1911	90,434	1,385	15.32	
1912	79,279	1,129	14.24	
1913	61,700	1,047	16.97	
1914	46,379	710	15.31	
1915	31,496	410	12.83	
1916	31,447	343	10.91	
1917	33,044	328	9.93	
1918	33,803	286	8.49	
1919	32,366	247	7.63	
1920	27,459	242	8.81	
1921	31,377	236	7.52	
1922	31,098	254	8.17	
1923	31,793	253	7.96	
1924	33,723	305	9.05	

SUMMARY OF VITAL STATISTICS FOR PANAMA CITY— EMPLOYEES AND NONEMPLOYEES.

From an estimated population of 59,635, there were 1,168 deaths during the year. Of these, 1,128 were from disease, giving a rate of 18.92, as compared with 18.08 for 1923, and 20.66 from 1922.

1

21.

ren under 5 years of age.

EMPLOYEES AND NONEMPLOYEES.

The 6 diseases causing the highest number of deaths, with their rates, were as follows:

The 6 diseases causing the highest number of deaths, with their rates, were as follows:

	1923.		1924.	
	Deaths.	Rate.	Deaths.	Rate.
Tuberculosis (various organs).....	60	1.92	82	2.62
Pneumonia (broncho and lobar).....	37	1.18	56	1.79
Organic diseases of the heart.....	28	.89	38	1.21
Diarrhea and enteritis (including colitis).....	18	.58	37	1.18
Nephritis (acute and chronic).....	37	1.18	36	1.15
Cancer (various organs).....	16	.51	18	.57

The death rate from tuberculosis was 2.62, as compared with 1.92 for 1923, 2.55 for 1922, and 2.30 for 1921. Tuberculosis caused approximately 18 per cent of all deaths from disease, as compared with 15 per cent in 1923, 19 per cent in 1922, and 13 per cent in 1921.

There were 690 live births reported during the year, giving a birth rate of 22.06. Of the total births reported, 5 per cent were stillbirths.

There were 79 deaths among children under 1 year of age, giving an infant mortality rate, based on the number of live births reported during the year, of 114.49.

Of the total deaths for all ages, 17 per cent occurred among children under 1 year of age, and 27 per cent among children under 5 years of age.

Below is a table showing the death rates in Colon from 1905 to 1924, from all causes:

Year.	Popula- tion.	Deaths.	Rate.
1905	11,176	553	49.48
1906	13,651	703	51.42
1907	14,549	571	39.24
1908	15,878	418	26.32
1909	17,479	396	22.65
1910	19,535	514	26.31
1911	19,947	527	26.42
1912	20,174	493	24.44
1913	20,232	489	24.17
1914	23,265	590	25.36
1915	29,331	640	21.82
1916	24,693	696	28.19
1917	25,386	667	26.27
1918	26,078	616	23.62
1919	26,078	573	21.97
1920	26,078	554	21.24
1921	28,789	497	17.26
1922	31,393	445	14.17
1923	31,285	393	12.56
1924	31,285	475	15.18

MALARIA.

The admission rate of employees from malaria was 16 per 1,000 for the year 1924. While the figures naturally vary somewhat from time to time, it should be noted that there has been a practically constant residual rate for this disease during the past 9 years, the only marked deviation being a rise to 31 per 1,000 in 1919, which occurrence is explained by the fact that in 1919 many infected native Panaman laborers were imported into the Zone to take the place of striking West Indian employees. As in the past, much of the malaria developing in the Canal Zone was contracted outside the sanitated areas of the Zone.


















The admission rate from malaria among employees has been:

Year.	Average number employed.	Rate.	
1906	26,547	821	
1907	39,238	424	
1908	43,890	282	
1909	47,167	215	
1910	50,802	187	
1911	48,876	184	
1912	50,893	110	
1913	56,654	76	
1914	44,329	82	
1915	34,785	51	
1916	33,176	16	
1917	32,589	14	
1918	25,520	18	
1919	24,204	31	
1920	20,673	19	
1921	14,389	15	
1922	10,447	17	
1923	10,976	19	
1924	11,625	16	

The admission rate from malaria was 18.00 for white employees, and 15.75 for black employees.

Two employees died from malaria. Both were employed by the Dredging Division, working at night in parts of Gatun Lake adjacent to unsanitated areas. One was a colored West Indian, the other a white American who refused to see a physician until nearly moribund. In spite of repeated warnings, many employees and their families persist in exposing themselves unnecessarily at night by visiting unsanitated regions within or outside of the Canal Zone.

The death rate from malaria among employees has been:

Year.	Average number employed.	Rate.	
1906	26,547	7.45	
1907	39,238	3.51	
1908	43,890	1.37	
1909	47,167	.85	
1910	50,802	.81	
1911	48,876	.84	
1912	50,893	.31	
1913	56,654	.30	
1914	44,329	.14	
1915	34,785	.23	
1916	33,176	.06	
1917	32,589	.09	
1918	25,520	.08	
1919	24,204	.08	
1920	20,673	.15	
1921	14,389	.00	
1922	10,447	.00	
1923	10,976	.09	
1924	11,625	.17	

The noneffective rate from malaria among employees in 1924 was 0.31, as compared with 0.55 in 1923, and 0.46 in 1922.

MOSQUITO CONTROL.

There has been no slackening of efforts to reduce mosquito breeding. Ditching of large swamps in the cattle pastures adjacent to Mount Hope and Gatun has been pushed from both directions. In another year drainage of the areas between the Canal and the highlands toward the east will be completed from Gatun to the Caribbean seaboard.

West of the Canal, in the northern district, much new work has been done. The large main drainage ditch on "Fill 3" has been deepened to sea level, the laterals have been cleaned and regraded, and a new extension has been dug at the northern end for the purpose of intercepting the run-off from the hills and discharging it directly into the old French Canal. Boggy streams are being cleaned and straightened to their sources, and a large tidal swamp on Limon Bay just to the west of the Canal entrance has been controlled by sea-level ditches.

East of the Coco Solo River the Army sanitary authorities are draining swamps and streams up to distances ranging from 1 to 2 miles beyond the Army and Navy stations east of Manzanillo Bay. Here, as elsewhere, the Health Department and the military sanitarians are linking up their programs and cooperating for the general good.

So great is the extent of these swamps near the Atlantic end of the Canal that, even if only a very small percentage of the mosquitoes which formerly bred in them reached Colon and Cristobal, nevertheless the invasion became noticeable, especially in the early weeks of each rainy season. Fortunately the control in these regions is a comparatively simple matter of shallow spade wide ditches which permit flood waters to escape and sea water to circulate freely through all parts of the low land.

In the southern district, mosquito breeding along the entire shore line of Miraflores Lake and its numerous arms is now prevented by oiling when necessary. Up to a few years ago mosquito control was practiced in only one small arm of this lake—the Pedro Miguel River inlet lying immediately behind the town of Pedro Miguel. In this arm all vegetation was kept removed from the shallow margins and oil, mixed with phenol-soap emulsion, was freely applied. A considerable force of men, at a cost ranging between \$600 to \$750 a month, was almost constantly employed on this limited area which had barely 3.5 miles of shore line. More recently it has been found advisable to keep under control the entire shore line of Miraflores Lake and its arms, which is over 25 miles in extent. Through the use of oiling boats, from which heated oil is sprayed upon the grassy lake margins, it has become practicable to prevent mosquito emergence in this greatly increased area with a crew of 3 men and at a cost of less than \$250 a month for labor and materials. The oil is heated solely to enable it to pass readily through the nozzles of the spray pump so that it will emerge in a finely divided state—practically a mist—which creates an efficient film upon the water. The shore line of Miraflores Lake is very shallow for the most part and in its grassy margins our most potent malaria vector, *Anopheles albimanus*, finds its favorite breeding place. A considerable part of the time of one man (a colored West Indian of long experience and training) is spent in searching these lake edges for mosquito larvæ, both before and after oiling. Oiling is carried out only when larvæ are discovered. This method of control has been found to be very efficacious.

In the vicinity of Corozal some large streams are being straightened and the bottoms lined with pre-cast concrete sections of 14-inch width. The banks have been laid back sufficiently to insure their grassing over.

In October of this year mosquito control work in the Republic of Panama adjacent to Panama City, in so far as the prevention of malaria is concerned, was placed under the direct supervision of the assistant chief health officer, thus centralizing under one head all field anti-mosquito work carried out by the Health Department on the Isthmus. The area concerned was designated as the *Panama Suburban District*,

and a full time sanitary inspector was placed in charge of it, whereas formerly the inspector in charge of mosquito control in Panama City had to give some of his time to other duties connected with municipal sanitation. As a result of this change it has been possible to inaugurate within the new district a policy more in accord with that carried out in the Canal Zone. A new limit has been established, at a distance of 1 mile from the farthest house in Bella Vista, within which boundary all standing water will be drained away, the streams will be trained, and much permanent work (concrete bottoms and tile) will be installed as rapidly as may be practicable. The change has made it possible to utilize to better advantage the forces of other Canal Zone sanitary inspectors for assistance in this work during such times as the conditions in their own districts permit. During the past 6 years so much work of a permanent nature has been done in the southern district of the Canal Zone that only one-third as many men are required for mosquito control as was formerly the case; the same result can be accomplished throughout those portions of the Republic of Panama in which the Canal Zone authorities are responsible for sanitation.

DISPOSAL OF WASTE AND FLY PREVENTION.

For some years past the garbage of Panama, Ancon, Balboa, and the neighboring Army posts has been disposed of by burying in low swampy ground east of Panama City, the management of this dump being under the immediate supervision of the health officer of Panama. The method, which has been described in previous annual reports of the Health Department, is successful in caring for the garbage with a minimum of nuisance and expense; odors are not marked, rats are not attracted, and flies do not breed to any troublesome extent. The situation as regards flies has recently been improved by substituting hot fuel oil for the larvacide formerly used to spray over the covered surface of the garbage; besides being more destructive to fly larvæ and pupæ, the oil is much cheaper.

New composting pits have been constructed near the Panama garbage dump for curing horse manure collected in the City of Panama previous to selling it to gardeners. Manure is kept in these pits a varying length of time, always sufficient, however, to insure destruction of the fly larvæ with which it is initially infested. The pits are about 60 feet long, 7 feet wide, and 6 feet deep, with a concrete curb extending from just above the ground level down to the rock-like indurated clay that underlies the soil at a depth of 2 or 3 feet. Each day's accumulation of manure is placed in a pit and immediately plastered over with a

6-inch layer of mud which is then sprayed with heated fuel oil. During the first two or three days thousands of maggots work their way to the surface and perish in the oil; the concrete curb prevents their escape into the soil at the sides and ends. Manure is sold from these compost pits only on certain days of the week and as soon as the day's sales are removed the exposed face of the composted manure is again plastered with mud and oiled. It has been found that manure of the type produced in Panama City, even when composted as long as 6 months, still proves attractive to flies when exposed to the weather in piles. Consequently, gardeners are required to put the manure into the ground or to spread it in a thin top dressing within 24 hours from the time of purchase.

INFANT MORTALITY.

The death rate per 1,000 live births in the cities of Colon and Panama, and in the Canal Zone, for the past 6 years have been as follows:

	1919.	1920.	1921.	1922.	1923.	1924.
Colon.....	155.29	142.21	139.28	139.66	115.66	114.49
Panama.....	154.47	155.30	173.95	147.23	141.95	138.06
Canal Zone:						
White.....	37.23	34.36	33.22	41.32	43.69	47.06
Black.....	154.00	130.00	134.73	120.27	88.31	123.01
Total (white and black).....	113.67	95.09	96.65	92.62	72.76	96.54

CHILD HEALTH EDUCATION AND CHILD HYGIENE.

Prior to 1924 no organized child health movement existed on the Canal Zone. In January, 1924, Miss Sally L. Jean, Director of the Health Education Division of the American Child Health Association, and Miss Julia W. Abbott, Associate Director of that Division, visited the Canal Zone at the invitation of Governor J. J. Morrow. These ladies studied the conditions existing here and made recommendations to a committee consisting of the Governor, the chief health officer, the chief quartermaster, the secretary of the bureau of clubs and playgrounds, the superintendent of schools, and others. The recommendations submitted formed a comprehensive plan for a campaign of child health education and child hygiene, and were accepted by the committee to be put into effect by the heads of the various departments.

Because of his previous training and experience in child welfare work, Dr. W. C. Cox, bacteriologist of the board of health laboratory, was selected to initiate this campaign, the work being carried on by him in addition to his regular duties. The plan included newspaper publicity

designed to arouse general interest in child hygiene, poster exhibits in the clubhouses, and talks on health subjects delivered at the clubhouses or before the various organized societies of the Canal Zone.

On February 4th a health center was inaugurated at the Balboa Clubhouse. At first this was limited to children between 6 and 16 years of age, but in April service was extended to those over 2 years of age. A total of 2,137 examinations were made on 721 children and the number of mothers visiting the center was 293. Forty-three children were referred for dental treatment and 62 were sent to the various clinics at Ancon Hospital; 18 corrective operations were secured. In May a similar center was organized at Cristobal. Dr. J. L. Byrd, city health officer, and Dr. C. A. Hearne, port quarantine officer, each volunteered to give one afternoon a week to this work. In April a pre- and post-natal center was organized in connection with the Colon dispensary. This has been highly successful and the work is carried on semiweekly by Dr. W. V. Levy.

A mothers' club was organized in Balboa on April 11, and Mrs. J. J. Morrow was elected president. There were 75 charter members enrolled at the first meeting, and the total membership at the close of the year was 103. On April 21 a similar club was organized at Cristobal. Mrs. C. A. Hearne was elected president. There were 36 charter members enrolled at the first meeting. In May the women of Pedro Miguel held a meeting and decided to unite with the Balboa club until early in 1925 when they planned to organize their own unit.

Three May Day health pageants were held in conjunction with the American Child Health Association National May Day Health Day Campaign. The pageant at Balboa was given on May 1; in Gatun on May 2; and in Cristobal on May 3. Approximately 2,500 people attended these pageants. A health talk was one of the features of each pageant.

A public health and school nurse for the Pacific side was employed by the Health Department in August. She immediately opened a pre-natal course of instruction for expectant mothers.

The child hygiene campaign during the year 1924 was mainly carried on by volunteer workers who gave more than 1,200 hours of their time to this activity.

PHYSICAL EXAMINATION OF SCHOOL CHILDREN.

During November and December the annual physical examination of pupils were conducted in all white schools of the Canal Zone. For the first time since the introduction of school examinations in 1917,

the children were examined with the clothing removed to the waist, this being made possible because of the presence of a health department nurse during the proceedings. An invitation was extended each mother to attend the examination of her child and approximately 15 per cent of the pupils examined were so accompanied. The results of the examination were as follows:

Number of children examined.....	1,730	Defects found requiring treatment—(Continued):	
Number of children found needing medical treatment.....	940	Pulmonary disease.....	13
Defects found requiring treatment:		Cardiac disease.....	29
Defective vision.....	204	Chorea and other nervous diseases.....	3
Defective hearing.....	22	Orthopedic defects.....	29
Defective nasal breathing.....	71	Malnutrition.....	242
Hypertrophied tonsils.....	252	Defective teeth.....	274
		Contagious diseases.....	4

DISEASES OF ANIMALS.

The veterinary force of the health department carries out the quarantine inspection of animals entering the Canal Zone or the cities of Panama and Colon; the inspection of animals transported by rail across the Isthmus; the ante- and post-mortem inspection of animals slaughtered for food; and the inspection of dairies, dairy herds, and milk handling.

Quarantine work in 1924 included the examination of 27,487 cattle and 100 horses and mules brought into the Canal Zone, or the cities of Panama and Colon, from the interior of the Republic of Panama, and from other countries. There were 7,563 cattle and 6,154 hogs inspected for rail shipment across the Isthmus. At the Colon, Panama, and Mount Hope abattoirs ante- and post-mortem examinations were made on 24,153 cattle, of which 59 carcasses and 726 edible parts were condemned. Forty-one of the carcasses were condemned on account of extensive bruises and septic wounds, 3 on account of septicemia, 10 on account of pneumonia, 2 on account of Texas fever, 1 on account of icterus, and 2 on account of tuberculosis. The 2 tuberculous cows came from local dairies in Panama where they contracted the disease on premises presumably infected by importation of pure bred stock from Europe. Fortunately, no tuberculosis has ever been found in any other *native* cattle slaughtered, numbering over 200,000 animals.

During the year all dairy herds supplying milk to the city of Panama and the Canal Zone were given the tuberculin test. Of 2,000 cows tested, 103 were reactors and were destroyed, the Panaman Government paying to owners of those in the Republic of Panama the valuation set by an appraisal board which acts in the case of all animals des-

troysed in Panama. Fortunately, the post-mortem findings showed that in only a few instances were the inroads of the disease sufficiently advanced to render the milk supply dangerous.

Regular inspections of dairies are conducted to insure cleanliness and acceptable conditions. In addition to this, samples of milk are taken at frequent intervals for chemical and bacteriological examination, which serves as a check on careless production. The entire milk supply of the Zone and of the cities of Panama and Colon is pasteurized before being delivered to the consumers.

Of 23,061 hogs slaughtered, 707 were condemned on account of cysticercosis, 119 on account of cholera, 21 on account of pneumonia, 2 on account of icterus, 9 on account of pyemia, 12 on account of pyrexia, and 3 on account of tuberculosis. The tubercular hogs were from a lot fed on garbage collected at hotels and restaurants. Cholera has been found among hogs slaughtered in Colon and Panama to the extent of nearly one-half of one per cent; this percentage is much higher than the natural rate for the Republic of Panama, presumably on account of holding animals in pens during long periods. Cholera practically does not exist in the interior. Cysticercosis has decreased within the last 5 years from 15 per cent to 3 per cent of all hogs slaughtered. This reduction is due to the work done by the Panaman Government assisted by the International Health Board, with a view to preventing the spread of hookworm disease of man. The decrease in cysticercosis has caused a saving of about \$50,000 per year in the cost of pork supplied the cities of Panama and Colon alone.

None of the more dangerous and destructive diseases of animals exist on the Isthmus at this time. Anthrax has not occurred in cattle for about 2 years, and when present it was confined almost entirely to the swampy pastures of the Atlantic side. Contagious abortion, which occurred several years ago has disappeared. Foot and mouth diseases and rinderpest in cattle, and glanders in horses and mules, have not occurred here. *Maladie du coit*, or dourine, has never been found among horses on the Isthmus. Strangles was imported with a shipment of mules, but strict quarantine and disinfection prevented its spread to other animals. Influenza of horses, which broke out in Colon stables, has disappeared without spreading to other locations. Murrina, which appeared on the Isthmus for several years, has ceased to occur. Goats kept on low ground die of a nodular disease caused by the parasite *Oesophagostoma colombianum*. Hemorrhagic septicemia caused the death of about 20 cattle and a number of goats within the last year.

During the year the health department supervised the disinfection of 6,000 hides and 15,250 pounds of skins which were to be shipped to the United States.

QUARANTINE DIVISION.

Surgeon C. P. KNIGHT, United States Public Health Service, Chief Quarantine Officer.

Quarantine policies for protection of the Canal Zone have been carried out as heretofore. It is a notable fact that of 5,958 ships calling at Canal Zone ports, only one was detained on account of quarantinable disease and this vessel was held solely for the purpose of completing the number of days of incubation required for craft from yellow fever ports.

The chief quarantine officer made two official trips during the year, the first to investigate an outbreak of yellow fever in San Salvador, and the second to continue the policy of making inspections of foreign ports and stimulating relations between sanitary officers.

At the request of the President of Salvador, that country was visited and a study was made of the outbreak of yellow fever in the capital. On recommendation of the chief quarantine officer, experts from the Rockefeller Foundation took charge of the campaign in July, and by October the disease had been stamped out. A rigid quarantine was placed against the ports of Salvador, and was continued through the year 1924.

All of the ports and some of the other towns of Peru and Chile were visited and contacts were made with the national and local health authorities of these two countries. Information received during this trip indicates that bubonic plague, both rodent and human, is present on the west coast of South America, and is a constant menace to the Canal. Typhus fever also exists, but owing to the restricted travel among the poorer classes it has not been found on any ship that entered the Canal ports. On account of the presence of foot and mouth disease a quarantine embargo was issued against South America with the exception of Colombia, Venezuela, British Guiana and Dutch Guiana; at the close of the year these quarantine restrictions were still in force.

A maritime quarantine conference, dealing with problems of the west coast of South America, was held in the city of Panama from February 25 to February 28. Delegates were accredited from the United States, Ecuador, Peru, Chile, Panama, and the Canal Zone. Unofficial observers were present from France, Cuba, and Jamaica, as well as from the Army, the Navy, and the Public Health Service of the United States. Resolutions were adopted as follows: (1) Recommending the adoption of cyanogen-chloride mixture as the standard gas fumigant for ships. (2) Reiterating the international obligation to make regular reciprocal reports of morbidity and mortality. (3)

Disapproving the routine partial fumigation of ships. (4) Recommending the periodic fumigation of ships only when free of cargo. (5) Recommending the placing of seaports in the best possible sanitary condition at the earliest practicable date. (6) Recommending the adoption of measures needful to prevent unnecessary or unwarranted delays to ships on account of maritime quarantine.

The amount of fumigation for the elimination of rodents increased somewhat over that in previous years. Although cyanogen-chloride gas has proved very successful for the destruction of rats, it was found through experimentation that the ordinary time and dosage used for rodents was not sufficient to kill all roaches; furthermore, that to rid a ship entirely of roaches, it is necessary to repeat fumigation at short intervals, since this gas, or any other used in fumigating ships, is not lethal for cockroach eggs.

Very little loss has been suffered by ships through quarantine detention. During the entire year there were but 3,000 ton-detention days, and 187 passenger-detention days, which shows that the cost to shipping was practically nil.

Vessels inspected and passed.....	3,575
Vessels detained in quarantine.....	1
Vessels given radio pratique.....	106
Vessels passed on sworn statement of Master.....	2,276
Totals.....	5,958
Supplementary inspections of vessels.....	2,979
Vessels fumigated for rats.....	149
Crew inspected and passed.....	195,741
Crew passed on sworn statement of Master.....	114,183
Crew passed by radio.....	13,023
Passengers inspected and passed.....	72,169
Passengers passed on sworn statement of Master.....	37,848
Passengers passed on radio pratique.....	3,777
Persons detained on board vessels on account of disease.....	90
Persons detained in quarantine.....	19
Persons vaccinated.....	1,189

Immigration operations continued under the division of quarantine as heretofore. The number of persons dealt with was 2,752; the number excluded and deported was 992; the number detained at station on account of immigration laws was 762, and the number detained and later landed was 128.

ANCON HOSPITAL.

(Capacity, 1,200 patients.)

Lieut. Col. WILL L. PYLES, Medical Corps, U. S. Army, Superintendent.

Administration.—During the year, the practice was established of holding periodic meetings of the entire staff, and monthly meetings of the head nurses. A "Clinic and Journal Club" was also established,

at the weekly meetings of which the entire medical staff, including the personnel of the board of health laboratory and the Ancon dispensary, takes part. Many visiting physicians attend these meetings.

Surgical clinic.—During the year, 1,386 major operations and 5,684 minor operations (including intravenous injections of arsphenamine) were performed; 3,384 cases visited the out-patient department; 266 obstetrical cases were delivered.

Medical clinic.—There were 3,368 cases treated in the out-patient department; 558 adults were vaccinated with 222 known "takes;" 352 children were vaccinated with 192 known "takes."

Eye and ear clinic.—There were 8,213 visits to the out-patient department; 2,160 operations were performed, and 1,387 refractions done. Many new items of equipment were placed in service in this clinic during the year, the more important being: A treatment chair with incidental equipment (making 3 now in use); an air compressor for the operation of sprays and for suction treatment of nose and throat conditions; and a new Halle's universal bone surgery outfit.

Radiographic clinic.—There were 2,627 cases handled for which 6,452 ordinary films and 2,859 dental films were used. During the year the following new equipment was received and placed in operation: A transformer unit for radiographic work; a Coolidge unit, consisting of a transformer, regulator and stabilizer for controlling the tube current; an X-ray exposure timer with foot switch attachment; a corona-proof overhead system; an X-ray table with accessories for combined radiographic and fluoroscopic work; and a Bucky fluoroscopic grid to cut out secondary radiations.

Radio-therapy clinic.—On March 1, 1924, a radio-therapy clinic was established, the chief of which is charged with the supervision and direction of radium therapy, X-ray therapy, and hydro-therapy. Six hundred and ninety out-patients and 268 hospital patients were treated in this clinic. The following initial new equipment was received and placed in service; 1 tube containing 50 mgm. of radium sulphate; 2 tubes each containing 25 mgm. of radium sulphate; 5 needles, each containing 10 mgm. of radium sulphate; and an X-ray therapy apparatus designed to deliver 200,000 volts and consisting of transformer unit, sphere gap for measuring voltages, stabilizing unit for constant tube current, two milliampere meters in series, corona-proof overhead system, Coolidge transformer for heating tube filament, treatment couch for deep therapy, treatment table for superficial therapy, treatment tube stand, two deep therapy Coolidge tubes, universal Coolidge tube for superficial therapy, and accessories. Later a diathermy apparatus was obtained. In the rooms set aside for hydro-therapy,

an electric light cabinet, a continuous bath and a shampoo table were installed, but this unit has not been placed in operation as yet because some of the equipment has not been received.

Nonresident patients.—Six hundred and fifty-six patients whose residence is outside the Canal Zone or the cities of Colon or Panama were treated in Ancon Hospital, and 47 in Corozal Hospital.

Operating expenses.—The following table gives the cost of operating the hospital for the past three years:

	1922.	1923.	1924.
Operating expenses ^a	\$525,584.44	\$520,551.97	\$558,595.46
Revenue.....	312,713.70	309,572.03	342,461.71
Net cost.....	212,871.74	210,979.94	216,133.75
Days relief furnished.....	112,574	109,599	129,525
Cost per patient per day.....	4.67	4.75	4.31
Cost of subsistence supplies per patient per day.....	.34	.34	.40
Operating expenses, Ancon dispensary.....	16,438.74	17,952.78	17,811.56
Revenue, Ancon dispensary.....	1,883.05	4,113.50	4,065.50

^a These figures do not include the salaries paid by the War Department to medical officers of the Army detailed for duty with The Panama Canal, which amounted to approximately \$46,900 in 1922, \$52,300 in 1923, \$58,900 in 1924.

COROZAL HOSPITAL.

(Capacity 400 patients.)

Capt. G. E. HESNER, Medical Corps, U. S. Army, Superintendent.

Repairs and alterations.—The second floor of ward "H," which consisted of small custodial rooms, has been remodeled by converting it into a large dormitory. This change has added space for 15 patients, and the building is better ventilated and illuminated, and much more sanitary. Routine painting and repairs to woodwork, plumbing, steam line, etc., have been done wherever required by hospital artisans with the help of patients. The laying of a new pipe line from a spring in the pasture has been commenced, with a view to furnishing a cheap water supply for the refrigerating machines at the dairy and kitchen and for washing down the piggery and barns.

Trees and gardens.—Two of the *Hydnocarpus weightiana* trees planted a few years ago are productive and bearing at this time a heavy crop of the fruit from the seeds of which chaulmoogra oil, used in the treatment of leprosy, is extracted. They are reported to be the only trees of their kind on the American continent which are productive. The maintenance of the lawns, flower beds, grounds, and hedges, has been effected mainly through the use of patients and with but little expense to the hospital.

Insane patients.—The census on December 31, 1924, was 375, as compared with 399 on the same day of the previous year. The number

admitted was 139, as compared with 153 for 1923. There were 139 discharges and 23 deaths, as compared with 113 discharges and 32 deaths last year. There were no suicides or deaths due to violence. Of the total released, 34 (24 per cent) were recovered, 62 (45 per cent) improved, and 43 (31 per cent) unimproved. Of the total admissions, 55 were cases paid for by the Government of Panama, and the remainder were Canal Zone charity or private pay cases. Of the total number discharged, 65 were deported.

Other patients.—There were on December 31, 29 black and 3 white chronic medical or surgical cases (not insane), as compared with 24 black and 3 white of this class at the beginning of the year. Eleven were admitted, 2 died, 2 were discharged, and 2 were repatriated. All those capable of performing work are encouraged to do so.

Recreation.—Weekly pictureshows and band concerts have been continued throughout the year. Of amusements provided for the patients the greatest pleasure appears to be derived from the moving pictures, which do not tire them as readily as do other forms of entertainment. During the dry season, weekly picnics were held in a grove back of the hospital, picnic lunches were served, and baseball and other sports were engaged in.

Treatment.—Intensive specific treatment is given to patients suffering from syphilitic psychoses, these constituting about 20 per cent of the total admissions. During the year, 426 doses of arsphenamin were administered intravenously, and 130 lumbar punctures were performed. The fact that the great majority of the patients are of low intelligence and exceedingly illiterate, often makes it difficult or impossible to discuss their mental disorders with them from a physcho-analytic standpoint. However, by teaching them to adapt themselves to their new environment, and by rendering their enforced sojourn free from unpleasantness, it has been possible to relieve the mental stress in most cases. All are encouraged to engage in some occupational work because it is generally conceded that the mental redemption of many cases may only be effected through diversional employment. The work at Corozal Hospital differs in many respects from that of the average occupational therapy department. There is no corps of trained aides and no special fund for this department; yet it is self-supporting. Effort has been made to exclude fancy, complex, artistic, and unpractical crafts, and to give instruction only along lines which have some economic value to the patient or the institution. There are five basic crafts: Rug-making, basketry, needle work, broom-making, and carpentry, with allied developments and out-door work. The greater part of the material used, except that for brooms, is salvaged or gathered from the jungle.

Occupational instruction helps the patients in both a therapeutic and an economic way, because most of them have no trade or profession, but come from a class which depends upon unskilled day-labor for a livelihood. In many instances the history shows that psychoses have been precipitated by poverty, which was brought about as a result of the husband being out of work and the wife unable to find employment for which she was fitted. Many such patients, as a result of treatment in the occupational department, learn something which not only may be of financial value to them, but also may become a means of preventing a recurrence of mental trouble.

The total receipts from the occupational ward amounted to \$6,251.34, of which \$4,523.84 was from the sale of brooms. The money is utilized for purchasing material required to continue activities in this department and for providing the workers with pin money.

The value of the produce taken from the patients' garden for hospital consumption amounted to \$3,394.72.

Farm Department.—About 20 additional acres of land were cleared, making a total of 100 acres under cultivation. The receipts for produce aggregated \$4,118.64, and for manure \$1,015.97.

Dairy.—The herd consists of 49 Jersey cows, and 23 calves; 8 Holstein cows and 10 calves; and 2 bulls. There were 76,341 quarts of milk produced, and milk sales during the year amounted to \$19,522.50.

Piggery.—There were 397 pigs and 50 hogs remaining on December 31. Fifteen acres were added to the hog pasture, increasing the total to 60 acres. The piggery has proven very profitable, the gross income derived from this division of the farm amounting to \$5,376.64 for the year.

Cemetery.—It was necessary to enlarge the cemetery this year by clearing off about 3 acres adjoining it on the west.

COLON HOSPITAL.

(Capacity, 80 patients.)

Maj. TOM S. MEBANE, Medical Corps, U. S. Army, Superintendent.

Patients.—During the year, 348 major and 143 minor operations were performed; there were 812 administrations of salvarsan, and 295 obstetrical cases were delivered. The dispensary physicians made 362 house and ship visits, and treated 38,502 patients in the out-patient clinic.

Special clinics.—An eye, ear, nose, and throat clinic has been established, thereby affording the residents on the Atlantic side the

advantages and benefits of refractions and correction of minor conditions without the long trip to Ancon Hospital with consequent loss of time.

A portable bedside X-ray apparatus has been installed, enabling the hospital for the first time to diagnose and treat properly fractures and other ailments requiring this apparatus. Formerly it was necessary to send all such cases across the Isthmus to Ancon Hospital.

Repairs.—The interior of the hospital and all exterior woodwork have been repainted during the year.

SANTO TOMAS HOSPITAL.

(Capacity, 500 patients.)

Major E. A. Bocock, Medical Corps, U. S. Army, Superintendent.

During August the patients were moved from the old hospital in the center of the city to the new reinforced concrete buildings in the Exposition grounds. The dedication ceremonies were held September 1, 1924, on which date, by decree of the President of Panama, the operation of the hospital was taken over entirely by the Panaman Government. The Superintendent, two physicians, chief nurse, and two ward nurses, who had been Canal employees, were replaced by appointees of the Panaman Government. These six positions had been filled by employees of the Panama Canal since 1905, under an agreement between the two Governments which was entered into at that time in order to afford more extensive hospital facilities for the people of the Isthmus, and to enable the Health Department of the Panama Canal to maintain close supervision over the treatment of infectious diseases in Panaman territory. There are now ample hospital facilities on the Isthmus; Santo Tomas Hospital reports promptly to the health officer of Panama all notifiable diseases; a saving to the United States Government of about \$14,000 a year results from the new arrangement; consequently no objection to the change was made by the authorities of the Panama Canal.

PALO SECO LEPER COLONY.

(Normal capacity, 82 patients.)

Mr. FRED D. TUCKER, Superintendent.

Dr. PHILIP HORWITZ, Attending Physician.

Admissions and discharges.—Twenty-two cases of leprosy were admitted to the Colony during the year. Of these, 13 were of the nodu-

lar type, 2 of the neural type, and 7 of the mixed type. Four cases were readmissions. Two of these readmissions were of the neural type, still negative bacteriologically, but suffering from trophic ulcers that required additional treatment; both of these were again paroled later in the year. The other 2 readmissions, one of the nodular type and one of the mixed type, were positive bacteriologically on reentry; both had been paroled from the colony some years before the institution of specific treatment with the ethyl esters of chaulmoogra oil. Five patients died during the year.

Treatment.—Ninety-four patients were given esters of chaulmoogric acid in 5 cc. doses. Twelve patients received ethyl esters of cod liver oil in intravenous and intramuscular injections, 5 cc. Three patients received 5 per cent sodium chaulmoograte in intravenous injections, 5 cc. The chaulmoogric esters were administered three times a week to most of these patients, and to others once weekly; the maximum quantity given to any one patient during the year was 1,021 cc.; the greatest number of injections given any individual was 195, this case receiving 5 cc. daily, except Sundays, for about 3 months without showing signs of overdosage. Five patients received no specific treatment; 1 of these died, 1 was discharged, and the remaining 3 were too old or feeble to be subjected to treatment.

Eleven cases have shown positive Wassermann reactions, and 9 of these received intravenous injections of novarsenobenzol (0.9 gm. per dose) and of mercurosal. Twelve patients were treated with thymol for uncinariasis, all with beneficial results.

Thirteen patients were taken once a week to the radiotherapeutic clinic at Ancon Hospital for treatments with X-ray, radium, ultra-violet light, and high frequency current. Trophic ulcers in nerve type cases were but slowly affected by the treatment.

Injections of esters, chemical cautery, and electro-cautery were all capable of destroying tubercles, but fulguration with high frequency current seemed to be the most efficient method for that purpose on account of its penetrating power.

Filtered X-rays were capable of causing absorption of the tubercles without any destruction of overlying skin. None of the above methods, however, were capable of rendering the skin bacteriologically negative at the site of the cauterized tubercle, even after its complete ablation.

Daily tamponings with esters of chaulmoogra, preceded by staining of ulcerated areas with warm carbol-fuchsin stain, was capable of rendering the nasal discharges bacteriologically negative in all but a small number of cases. Radium element (50 mgm. filtered through 0.52

mm. aluminum and rubber tubing), 60 minutes exposure to both sides of nasal septum, three exposures, caused absorption of leprous infiltration of mucous membranes of septum and turbinates, but did not affect the presence or number of organisms in areas so treated. Neither did the ultra-violet rays (40 minutes exposure with curved quartz rod and pressure) affect the bacteriological picture of areas so exposed.

Intra-neural injections into the fusiform swellings of ulnar and post-tibial nerves with esters of chaulmoogra were continued as of last year with beneficial results. Exposure to filtered X-rays was capable of causing subjective changes in skin sensation along areas of nerve distribution and was very useful as an adjuvant in the treatment of trophic ulcers.

The Von Pirquet test with old tuberculin was tried on 16 patients in various stages and types of the disease. All showed positive reactions as compared with the controls. The time of appearance of the reactions was delayed in most instances from 2 to 6 days. Smears taken from nodules caused by the tuberculin were negative for *B. lepræ*.

Lepra fever and eruptions were more numerous this year than last. Attacks were mainly confined to new arrivals, though some old residents were also affected. A few of the patients had several attacks in succession at short intervals. In none, however, did the new tubercles so developed remain long after fever subsided. As in previous years, these attacks occurred at periods of season change (about April-May and November-December) when colds and "flu" are common on the Isthmus.

The effects of specific treatment for leprosy and its complications were about the same as in previous years. No attempt is made here to evaluate the use of the ethyl esters of cod-liver oil or the soap of chaulmoogra, as they were introduced only in the last month of the year. The cod-liver oil esters caused coughing spells similar to those occurring when chaulmoogra is given by vein. Temperature and local reactions followed in practically the same manner as with chaulmoogra. The soap, when given intravenously, caused no coughing spells, but instead a slight transient cramp-like pain in the abdomen which occurred immediately after injection and subsided within 5 to 10 minutes. No temperature changes followed. If the solution oozed out into tissues surrounding the vein, indurations similar to those caused by the esters resulted and the lumina of veins in the neighborhood became partially occluded. Owing to its low degree of solubility (5 cc. equals 0.25 gm. of sodium chaulmoograte), this drug could be given only in very small quantities.

BOARD OF HEALTH LABORATORY.

(Operated in connection with Ancon Hospital.)

Dr. L. B. BATES, Chief of Laboratory.

Bacillus typhosus.—Recovered in blood culture from 11 individuals; 4 from shipboard, 4 from Colon, and 3 from the Canal Zone. *B. paratyphosus A*, *B. paratyphosus B*, and *B. Paratyphosus C* were not recovered at any time during the year from blood, stool, or urine.

Typhoid carriers.—On December 31, 1923, two typhoid carriers were under sanitary surveillance, H. B. and G. H., both of Panama City. Stool specimens from each were examined monthly. All specimens were positive for *B. typhosus*. No new carriers were discovered during the year.

Bacillus dysenteriae.—Dysentery bacilli were recovered from the stools of 18 patients. The Shiga bacillus and Type III (Sonne) organism were each recovered once, and Type II organism (Flexner, Hiss-Russell, Y, etc.) was recovered from 16 patients.

Respiratory infections.—In November quite a large number of people on the Isthmus suffered from an acute respiratory infection. This infection was generally mild in type. Sputum specimens collected under aseptic precautions from approximately 75 of these persons who had the severest attacks, and who were patients in Ancon Hospital, were cultured and studied. The influenza bacillus was not recovered from a single culture, neither was the hemolytic streptococcus. The cultures contained only the ordinary mouth organisms.

Tonsil and adenoid examinations.—The routine examination of tonsils and adenoids removed at operation was continued throughout the year. Of 463 tonsils removed alone, 8 or 1.72 per cent were found to be tuberculous; of 10 adenoids removed alone none were tuberculous; of 377 tonsils and adenoids removed together 9, or 2.38 per cent were tuberculous. Of this last 9, 3 tonsils alone were tuberculous, 5 adenoids alone were tuberculous, and in one set both tonsils and adenoids were tuberculous. To summarize, of 850 cases in which tonsils, adenoids, or both, were examined, 17 or 2 per cent presented tuberculous lesions.

Rat examination.—The following paragraph appeared in the annual report of the Health Department for 1923:

"Following the appearance of an article entitled 'Plague-Infected Rats Without Visible Lesions' in *United States Public Health Reports*, Vol. 38, No. 33, published August 17, 1923, it was decided to use the smear and animal inoculation methods therein recommended in the examination of a portion of the rats submitted to this laboratory. It was impracticable to apply these methods to all specimens as the time

factor prohibited so extensive a study. However, since September, when this plan was inaugurated, 520 rats have been thus examined. Smears of livers and spleens were stained by Gram's method and examined microscopically. Small pieces of livers and spleens were macerated in sterile normal saline by means of a sterile mortar and pestle. This suspension, prepared from the organs of not more than 10 rats, was then subcutaneously injected into the abdominal wall of a healthy guinea pig. All pigs dying in less than 7 days were autopsied, and those living 7 days were bled to death and then autopsied, their blood being used in the complement fixation tests. Gross inspection and smears of liver and spleen were made in the examination of these animals. Thus far no positive results for plague have been obtained."

During the year 1924 the special smear and animal inoculation work referred to above was continued. Six hundred and fifty rats were thus examined. No positive results for plague were obtained. This was in addition to the routine autopsy examination of 11,252 rats.

Articles prepared and presented.—The following papers were prepared at the Laboratory during the year:

Studies in the Chemistry of the Blood, III; Observations on the Creatinin of the Blood, by Mr. James E. Jacob.

Preliminary Report on Total, White and Differential counts of Blood in Normal, Healthy Individuals Dwelling in the Canal Zone, by Dr. W. C. Cox.

Preliminary Report on Investigation of Sugar Content of Blood (human) in the Tropics with Special Reference to the Canal Zone, by Dr. W. C. Cox and Mr. J. E. Jacob.

A Clinical and Bacteriological Analysis of the Bacillary Dysentery Cases in Ancon Hospital during the Past 5 Years, by Dr. R. C. Connor and Dr. L. B. Bates.

The first three of these papers were presented at the June meeting of the Medical Association of the Isthmian Canal Zone. The fourth was read at the International Conference on Health Problems in Tropical America held at Kingston, Jamaica, July 22–31, 1924, by Dr. R. C. Connor. It was also published in the *International Clinics*, Vol. IV, Thirty-fourth Series, December, 1924.

Creatinin in blood.—In the investigation of the creatinin of the blood it was found that the so-called creatinin reaction was not specific, and the substance giving this reaction in some instances could be separated into an alcohol-soluble and an alcohol-insoluble portion. Following the presentation of this work in the paper noted above, the investigation was continued along a different line. An effort was made to establish the presence of creatinin by the formation of the double compound with zinc chloride. Contributors to the discussion of the creatinin question have reported negative results along this same line, but as they have for the most part dealt with normal bloods, this work was carried out with abnormal bloods giving a very heavy creatinin reaction. No creatinin-zinc chloride was obtained, although in control experiments with a corresponding amount of creatinin, based upon the intensity of the creatinin reaction, the crystals were very readily secured.

During the year approximately 32,000 reports have been rendered. This does not include duplicates.

BACTERIOLOGICAL EXAMINATIONS.

Blood cultures.....	243
<i>B. typhosus</i>	11
<i>Pneumococcus Type IV</i>	1
<i>B. mucosus capsulatus</i>	1
<i>Staphylococcus albus</i>	8
<i>Staphylococcus aureus</i>	9
Stools cultured for typhoid-dysentery group.....	2,620
Positive stool cultures.....	57
<i>B. typhosus</i>	5
<i>B. typhosus</i> (from 2 carriers).....	22
<i>B. dysenteriae Group I (Shiga)</i>	1
<i>B. dysenteriae Mannite Fermenter, Group II</i>	27
<i>B. dysenteriae Mannite Fermenter, Group III</i>	1
<i>Bacillus of typhoid-dysentery group (not identified)</i>	1
Urines cultured for typhoid group.....	2,110
Urine positive for <i>B. typhosus</i>	1
Urines cultured for organisms other than typhoid group.....	206
Positive urine cultures (61 of these <i>B. coli</i>).....	95
Throat cultures for <i>B. diphtheriae</i>	1,359
Positive for <i>B. diphtheriae</i>	21
Nasal cultures for <i>B. diphtheriae</i>	78
Positive for <i>B. diphtheriae</i>	2
Throat cultures for organisms other than <i>B. diphtheriae</i>	10
Spinal fluid cultures.....	79
Positive spinal fluid cultures.....	11
<i>B. influenzae</i>	1
<i>Pneumococcus Type I</i>	3
<i>Pneumococcus Type II</i>	2
<i>Staphylococcus albus</i>	1
<i>Staphylococcus aureus</i>	4
Eye cultures.....	7
Ear cultures.....	11
Mastoid cultures.....	11
Naso-pharyngeal cultures.....	3
Sputum cultures.....	145
Culture from epitrochlear gland.....	1
Pleural fluid cultures.....	23
Ascitic fluid cultures.....	2
Knee fluid cultures.....	18
Ankle fluid cultures.....	1
Cultures for Ducrey's bacillus.....	25
Cultures from skin lesions.....	2
Cultures of pus from various locations.....	16
Gland cultures.....	5
Bile cultures.....	17
Autopsies cultured.....	116
Organs, exudates, etc.....	210
Surgical tissues cultured.....	7
Darkfield examinations.....	319
Positive for <i>Treponema pallidum</i>	27
Conjunctival smears.....	153
Smear from ulcer on jaw.....	1
Mouth smear (ulcer).....	1
Sputum smears for <i>B. tuberculosis</i>	149
Positive for <i>B. tuberculosis</i>	26
Sputum examined for spirochaetes.....	1
Throat smears.....	501
Positive for <i>fusiform bacillus and spirillum of Vincent's angina</i>	203
Smear from larynx (positive for <i>B. tuberculosis</i>).....	1
Cervical abscess smear for <i>B. tuberculosis</i>	1
Smears from venereal lesions.....	313
Positive for <i>spirilla similar to those found in Vincent's angina</i>	34
Urethral smears.....	171
Vaginal smears.....	22
Smear from ulcer on foot.....	1
Urine examined for <i>B. tuberculosis</i>	5
Spinal fluid examined for <i>B. tuberculosis</i>	2
Cell count of spinal fluids.....	6
Examination of leper suspects.....	32
Positive for <i>B. lepras</i>	24
Examinations of lepers previous to parole.....	3
Examinations of paroled lepers.....	3
Autogenous vaccines prepared.....	59
Feces examined for parasites and ova.....	130
Blood films examined for malarial parasites.....	1,627

BACTERIOLOGICAL EXAMINATIONS—Continued.

Positive for <i>Tertian malarial parasites</i>	318	
Positive for <i>E. A. malarial parasites</i>	118	
Positive for <i>Quartan malarial parasites</i>	2	
Pasteur treatment administered.....		14
Urine examined for gonococcus.....		4
Scrapings from under finger nail for fungus.....		1
Stomach contents examined for blood.....		1
Water from Balboa clubhouse swimming pool.....	231	
Water from Balboa Army & Navy Y. M. C. A. swimming pool.....	15	
Water from Arenal River.....	3	
Water from beaches.....	21	
Water from well.....	2	
Water from Hotel Washington swimming pool.....	15	
Food stuffs examined:		
Milk cultured for bacteria count.....	500	
Ice cream cultured for bacteria count.....	6	
Pread examined for rope.....	2	
Culture of canned cherries.....	1	
Culture of canned vegetables.....	9	
Culture of canned fruit salad.....	1	
Culture of raw meat.....	1	
Culture of salted cod fish.....	1	
Autoclaves tested.....		4
Miscellaneous smears and examinations.....		160

SEROLOGICAL EXAMINATIONS.

Wassermann tests.....	16,099
Gonococcus complement fixation tests.....	13
Agglutination tests.....	51
Blood typing for transfusion.....	32
Examination of blood for coagulation time.....	3
Blood sera prepared by Swift-Ellis method for intraspinal injection.....	14

ANALYSIS OF WASSERMANN TESTS.

A total of 15,445 Wassermann tests were performed on the blood of 10,624 persons. The results of these tests are summarized below:

TABLE SHOWING NUMBER OF PERSONS ON WHOM WASSERMANN TESTS WERE MADE AT BOARD OF HEALTH LABORATORY AND RESULTS OF TESTS, 1924.

Race, sex, and status.	Individuals positive.	Individuals negative.	Total individuals tested.	Per cent of individuals positive.
White, civil, U. S. citizens:				
Males.....	153	1,541	1,694	9.03
Females.....	24	238	262	9.16
Children.....	1	41	42	2.38
White, soldiers, males, U. S. citizens.....	297	3,305	3,602	8.25
Totals.....	475	5,125	5,600	8.48
White, other than U. S. citizens:				
Males.....	101	433	534	18.91
Females.....	31	260	291	10.65
Children.....	3	24	27	11.11
Totals.....	135	717	852	15.85
Blacks and mulattoes:				
Males.....	547	1,550	2,097	26.08
Females.....	326	1,409	1,735	18.79
Children.....	15	273	288	5.21
Totals.....	888	3,232	4,120	21.55
Chinese, males and females.....	7	45	52	13.46
Grand totals.....	1,505	9,119	10,624	14.17

The figures in the above table are based on the number of individuals examined and not on the number of tests made.

In addition, Wassermann tests were made on 624 spinal fluids taken from 501 individuals, and of these tests 115 or 18.42 per cent were positive.

PATHOLOGICAL EXAMINATIONS.

Autopsies.—A total of 262 autopsies were performed at the Board of Health Laboratory. The causes of death were as follows:

General Diseases:

Typhoid fever.....	1
Malarial fever, Estivoautumnal.....	3
Measles.....	2
Influenza.....	1
Dysentery, bacillary.....	4
Leprosy.....	1
Septicemia.....	1
Pellagra.....	3
Tuberculosis of the lungs.....	25
Acute miliary tuberculosis.....	6
Tuberculosis of bones and joints.....	1
Rickets.....	2
Syphilis, tertiary.....	3
Cancer of the buccal cavity.....	1
Cancer of the stomach and liver.....	6
Cancer of the uterus.....	3
Cancer of the male genital organs.....	2
Cancer of the suprarenal glands (hypernephroma).....	1
Diabetes.....	1
Addison's disease.....	1
Leukemia.....	1
Leukemia, lymphatic.....	1
General amyloid degeneration.....	1
Total.....	71

Diseases of the Nervous System and of the Organs of Special Sense:

Simple meningitis.....	1
Pneumococcus meningitis.....	1
Locomotor ataxia.....	1
Cerebral hemorrhage, apoplexy.....	5
Softening of the brain.....	1
General paralysis of the insane.....	8
Epilepsy.....	1
Convulsions of infants.....	2
Total.....	20

Diseases of the Circulatory System:

Pericarditis.....	1
Acute endocarditis.....	4
Malignant endocarditis.....	2
Other organic diseases of the heart.....	14
Angina pectoris.....	1
Aneurysm.....	3
Arteriosclerosis.....	3
Varices.....	1
Hemorrhage, postoperative.....	1
Total.....	30

Diseases of the Respiratory System:

Fronchopneumonia.....	8
Lobar pneumonia.....	6
Pleurisy.....	2
Empyema.....	3
Gangrene of the lungs.....	1
Acute respiratory infection (etiology undetermined).....	2
Total.....	22

Diseases of the Digestive System:

Diarrhea and enteritis (under 2 years).....	3
Diarrhea and enteritis (2 years and over).....	2
Colitis.....	1
Acute appendicitis.....	1
Intestinal obstruction.....	1
Ischio-rectal abscess.....	1
Duodenal ulcer.....	2
Acute yellow atrophy of the liver.....	1
Cholecystitis.....	1
Simple peritonitis.....	3
Acute pancreatitis.....	1
Total.....	17

Nonvenereal Diseases of the Genito-Urinary System and Annexa:

Acute nephritis.....	2
Bright's disease (chronic nephritis).....	10
Acute pyelitis.....	1
Pyelonephrosis.....	2
Chronic pelvic inflammatory disease.....	1
Total.....	16

The Puerperal State:

Extra-uterine pregnancy.....	1
Toxemia of pregnancy.....	3
Eclampsia.....	1
Total.....	5

Diseases of the Bones and of the Organs of Locomotion:

Myelomatosis.....	1
Acute bilateral mastoiditis.....	1
Total.....	2

Malformations:

Congenital malformations.....	4
Total.....	4

Diseases of Early Infancy:

Icterus neonatorum.....	3
Premature birth.....	9
Congenital debility.....	4
Malnutrition.....	6
Atelctasis neonatorum.....	2
Injury at birth (cerebral hemorrhage).....	1
Total.....	25

Affections Produced by External Causes:

Suicide by drowning.....	1
Acute arsenical poisoning.....	1
Strychnine poisoning, accidental.....	1
Burns (conflagration excepted).....	2
Absorption of deleterious gases (conflagration excepted).....	3
Accidental drowning.....	6
Traumatism by firearms.....	1
Traumatism by fall.....	2
Traumatism by automobile accidents.....	3
Fracture of larynx (on bicycle colliding with tractor).....	1
Fracture of skull (thrown from truck).....	1
Sunstroke.....	1
Homicide by cutting or piercing instruments.....	1
Homicide by blunt instrument in hands of unknown party.....	1
Traumatism by blow received in prize fight.....	1
Multiple injuries due to falling section of pipe.....	1
Traumatism by explosive.....	1
Traumatic gangrene.....	1
Totals.....	29

Ill-Defined Diseases:

Ill-defined.....	3
Total.....	3

Appendix:

Stillbirths.....	19
Totals.....	19
Grand total.....	262

TABLE SHOWING THE MORE FREQUENT CAUSES OF DEATH FOUND AT AUTOPSY IN
BOARD OF HEALTH LABORATORY, 1924.

	Cases.	Per cent of autopsies.
Tuberculosis.....	33	12.5
External causes.....	29	11.0
Organic heart disease.....	21	7.9
Pneumonia, broncho and lobar.....	14	5.3
Cancer.....	13	4.9
Bright's disease (acute and chronic nephritis).....	12	4.5
Syphilis (including general paresis).....	12	4.5
Malnutrition in infants.....	10	3.8

TABLE SHOWING THE MORE FREQUENT CAUSES OF DEATH FOUND AT AUTOPSY IN BOARD OF
HEALTH LABORATORY, 1904 to 1924.

Date.	Number of autopsies per year.	Pneumonia.	Tuberculosis.	Hemoglobinuric fever and malaria.	Affections produced by external causes.	Chronic nephritis.	Combined types of edy enter.	Organic heart disease.	Typhoid.	Diarrhea and enteritis (in children.)	Cancer.
1904....	6	1	1								
1905....	269	60	9	27	3	8	5	3	9		2
1906....	509	191	22	50	24	23	39	15	33		2
1907....	496	156	35	27	40	27	36	12	58	4	4
1908....	361	59	63	46	26	25	23	11	14		7
1909....	295	55	37	26	32	31	11	17	11	1	5
1910....	451	50	91	52	30	37	36	16	10	6	4
1911....	508	83	102	41	38	36	19	20	9	11	11
1912....	425	53	79	23	37	27	15	22	6	7	11
1913....	460	47	89	21	34	26	8	26	5	23	12
1914....	375	36	78	6	38	12	6	27	5	14	3
1915....	328	28	56	14	20	12	5	14	2	15	10
1916....	323	25	81	8	17	20	7	10	6	9	7
1917....	330	24	51	5	21	23	3	19	1	3	5
1918....	253	38	68	6	6	12		8		1	5
1919....	324	22	55	3	15	14	3	20	3	10	11
1920....	334	46	55		29	11	5	16			6
1921....	289	14	37	4	16	5	8	17	2	4	7
1922....	262	14	29	5	19	9	4	9	3	6	10
1923....	205	6	17	3	9	9	5	12	2	1	11
1924....	263	14	33	3	29	10	4	21	1	3	13
Totals..	7,066	1,022	1,088	370	483	377	242	314	180	118	146

* This includes 32 cases of influenza.

TABLE SHOWING NUMBER OF AUTOPSIES PERFORMED REVEALING THE FOLLOWING DISEASES
PER YEAR AT BOARD OF HEALTH LABORATORY, 1904 TO 1924

Date	Autopsies performed per year.	Yellow fever.	Beriberi.	Ankylostomiasis.	Tetanus.	Infectious diseases of children	Plague.	Smallpox
1904.....	6							
1905.....	269	12	7	7	2		1	
1906.....	509	1	5	4				
1907.....	496			2	1			
1908.....	361		1	2	3			
1909.....	295	2					1	
1910.....	451	2						
1911.....	508		1	1	1		1	
1912.....	425	1			1	4		
1913.....	460			2	3	1		
1914.....	375		1		4	2		
1915.....	328	3	1		2	1		
1916.....	323		2			3		1
1917.....	330		7		1	2		
1918.....	253			2		3		
1919.....	324	2				3		
1920.....	334					1		
1921.....	289					2		2
1922.....	262				1	3		
1923.....	205				1			
1924.....	263					2		
Totals.....	7,066	23	26	20	20	27	3	3

* All cases since 1905 were imported cases.

Per cent autopsied.—Four hundred and three bodies (not including 6 disinterred) passed through the laboratory; 263 or 65.3 per cent were autopsied, one of these autopsies having been done at Santo Tomas Hospital before receipt at the laboratory.

Malaria carriers found at autopsy, 14.

Intestinal parasites found at autopsy.—Nineteen cases in the 263 autopsies, or 7.2 per cent, showed one or more parasites or their ova, as follows:

Uncinaria.....	12	Trichocephalus.....	1
Ascaris.....	3	Taenia saginata.....	1
Strongyloides.....	3		

TABLE SHOWING CAUSES OF DEATH FOUND AT AUTOPSY OF LEPERS IN BOARD OF HEALTH
LABORATORY, 1924.

Autopsy No.	Cause of death.	Contributory causes.
* 6813	Acute pleuritis	Pulmonary congestion.
6826	Chronic nephritis.....	Acute pericarditis; leprosy.
6908	Leprosy.....	Chronic nephritis.
6968	Pulmonary tuberculosis.....	Leprosy.
6980	Organic disease of the heart.....	Arteriosclerosis; leprosy.
6998	Acute miliary tuberculosis.....	Leprosy.
* 7061	Ischiorectal abscess.....	Pulmonary tuberculosis; leprosy.

* Paroled case.

NUMBER OF MICROSCOPIC EXAMINATIONS AND REPORTS ON SURGICAL SPECIMENS.

Eyes, enucleated.....	7
Eye, growth from.....	2
Tumors from eyelids.....	2
Nasal polyps.....	5
Specimens from nose, other than polyps.....	6
Ears, growths from.....	1
Lip, specimens from.....	4
Mouth, tumors from.....	3
Tissue from lower alveolar process.....	1
Tongue, specimens from.....	4
Jaw, epulis from lower.....	1
Submaxillary tumor.....	1
Tonsils, one.....	3
Tonsils, pairs.....	462
Tonsils, pairs and adenoids.....	377
Cyst from posterior pillar of tonsil.....	1
Adenoids.....	10
Palate, soft, growth from.....	1
Parotid region, tumor of.....	2
Submaxillary glands.....	1
Thyroid gland, portion of.....	4
Thyroid gland.....	4
Vocal cord, tumors from.....	3
Glands from neck and jugular vein.....	1
Neck, tumor from.....	1
Breast.....	6
Breast, male.....	2
Breast, specimens from.....	10
Liver, tissue from.....	1
Gall bladder.....	5
Spleen.....	1
Peritoneum and omentum, specimens from.....	4
Kidney.....	2
Hernia, sac, contents of.....	2
Bladder, excised specimen from.....	1
Prostate.....	7
Prostate, seminal vesicles and part of each vas.....	1
Foreskin.....	1
Peri-urethral tumor mass.....	1
Penis, excised ulcer of.....	3
Testicle.....	6
Testicle, cord and epididymis.....	2
Epididymis and vas.....	2
Cord, small nodule just above epididymis.....	1
Uterus.....	4
Uterus, and adnexa.....	59
Uterus, adnexa and appendix.....	23
Uterus, specimens from.....	21
Uterus, placenta and child (with or without adnexa).....	2
Uterine cervix, or specimens from.....	21
Tube or tubes.....	6
Tube or tubes with ovary or ovaries.....	9
Tube or tubes with other specimen.....	5
Ovary or ovaries.....	3
Ovary or ovaries with other specimens (tubes excepted).....	6
Other combinations of female genital organs.....	2
Specimens from external female genitalia.....	3
Stomach, specimens from.....	3
Intestine, resected portion of, small.....	3
Appendices (including 31 removed with female genitalia).....	216
Transverse colon, specimen from.....	1
Rectum, specimens from.....	7
Peri-rectal fistulous tract.....	1
Anal fistulous tract.....	6
Pilonidal cyst, coccygeal.....	1
Upper extremity, or specimens from.....	7
Lower extremity, or specimens from.....	14
Skin and subcutaneous tissue.....	31
Small pieces of tumor in left 11th interspace.....	2
Rib, section of necrotic.....	1
Lymph nodes, cervical.....	3
Lymph nodes, axillary.....	3
Lymph nodes, inguinal.....	11
Lymph nodes, inguinal and femoral.....	1
Lymph nodes, femoral.....	1
Lymph nodes, omental and mesenteric.....	1
Lymph nodes, location not given.....	2
Nerve, section of.....	1
Colon Hospital autopsy sets of tissue (30 tissues).....	14
Panama Hospital autopsy sets of tissue (3 tissues).....	1
Total.....	1,460

Lesions in surgical specimens.—The principal lesions encountered in surgical specimens other than inflammatory, were as follows:

Malignant tumors (cancer):

Eye and adnexa.....	1
Lip.....	1
Tongue.....	3
Throat (submaxillary).....	1
Breast.....	5
Peritoneum and omentum.....	2
Kidney.....	1
Bladder and urethra.....	1
Prostate.....	2
Penis.....	1
Uterus.....	4
External female genitals.....	1
Gastro-intestinal tract.....	4
Arm and hand.....	2
Skin and subcutaneous tissues.....	4
Lymph nodes.....	3
Total.....	36

Benign tumors:

Fibroma of conjunctiva.....	1
Nasal polyps.....	4
Lymphoma of roof of nostril.....	1
Angioma of lip.....	1
Papillomata of mouth.....	3
Capillary hemangioma of tongue.....	1
Vascular fibroma of jaw.....	1
Fibrous epulis.....	1
Cyst from posterior pillar of tonsil.....	1
Mixed tumor parotid region.....	1
Papilloma of vocal cord.....	3
Cystic and colloid goiters.....	5
Adenomatous or nodular goiter.....	1
Fibro-adenomata of breast.....	4
Fibroma of breast.....	1
Chondroma of breast.....	1
Adenoma of breast.....	1
Mixed tumor of peritoneum.....	1
Papillary cystadenoma of mesentery.....	1
Hypertrophied prostate.....	1
Hydrocele.....	1
Uterine polyps.....	3
Fibromyomata uteri.....	38
Diffuse fibromyomatosis uteri.....	1
Cystic ovaries and ovarian cysts.....	47
Adenomatous cysts of ovary.....	1
Dermoid cysts of ovary.....	5
Nabothian cysts.....	5
Fibro-adenoma of buttocks.....	1
Fibro-adenoma of toe.....	1
Osteoma, great toe.....	1
Keloid.....	1
Papillomata.....	6
Pigmented moles.....	2
Epithelial cysts.....	5
Sebaceous cysts of scalp.....	1
Dermoid cyst (pilonidal).....	1
Dermoid cyst, cervical.....	1
Hemangioendotheliomata (knee and lip).....	2
Fibromata (skin).....	5
Giant cell sarcomata.....	3
Lipoma.....	1
Total.....	166

Specimens showing tuberculosis:

Tonsils.....	11
Adenoids.....	5
Tonsils and adenoids.....	1
Lymphadenitis (facial).....	1
Cervical lymph nodes.....	3
Peritoneum.....	1
Appendix.....	1
Fistulous tract, perirectal.....	1
Lymph nodes, femoral.....	1
Lymph nodes, location not given.....	1
Skin (lupus).....	1
Autopsy sets of tissue from Colon Hospital.....	3
Total.....	30

Other infrequent lesions encountered:

Tumor caused by <i>Onchocerca coecutiens</i> (from Guatemala).....	1
Amotio retinae (with panophthalmitis).....	1
Hypertrophy of thyroid gland with one adenoma in a case of exophthalmic goiter).....	1
Axillary nodes from case of acute lymphatic leukemia.....	1
Blastomycosis of hand.....	1
Chondroma of breast.....	1
Calcification in liver.....	1
Colombian spleen.....	1
Extensive pyonephrosis in resected kidney.....	1
Intestine, 5½ feet resected, gangrenous.....	1
Full term abdominal pregnancy.....	1
Ruptured uterus at term with child, placenta, and adnexa.....	1
Early pregnancy (ovum) in uterus.....	1
Ectopic tubal pregnancy (1 ruptured).....	3
Bilateral fibro-adenomatous (?) growth of proximal ends of tubes.....	1
Madura foot.....	1
Toes with ainhum.....	1
Leprosy nodule.....	1
Total.....	20

Miscellaneous human examinations:

Placental blood films.....	275
Darkfield examinations of liver.....	1
Differential blood counts.....	5
Blood counts, complete.....	1
External description of human body.....	2
Blood for filaria survey.....	8
Differential leucocyte count.....	1
Four-month fetus.....	1
Three and one-half month fetus.....	2
Three-month fetus.....	1
Ectopic gestation complete.....	1
Fetus, placenta and membranes complete.....	1
Examination of skin lesions.....	1
Total.....	300

Animals (wild and domestic), bacteriological examinations:

Cultures from animal autopsies (cattle).....	2
Culture of pus from shoulder abscess (cow).....	1
Total.....	3

Animals (wild and domestic), autopsies:

Guinea pigs (after inoculation).....	65
Rabbits.....	2
Hens.....	2
Dogs.....	2
Pigeon.....	1
Wild turkey.....	1
Total.....	73

Animals (wild and domestic), miscellaneous examinations:

Cattle tissues for tuberculosis (22 positive for <i>B. tuberculosis</i>).....	44
Dog's brain for rabies.....	1
Guinea pig tissues for tuberculosis.....	1
Tumor from lip of mule for histological examination.....	1
Total.....	47

Rats examined.....	11,252
<i>Mus musculus</i>	5,871
<i>Mus alexandrinus</i>	462
<i>Mus norvegicus</i>	519
<i>Mus rattus</i>	4,400
Rat smears examined (from liver and spleen).....	1,250
Guinea pigs inoculated (from 625 rats).....	78

Microscopic slides prepared:

Surgical preparations (30 frozen).....	5,098
Autopsy preparations (20 frozen).....	2,699
Animal preparations.....	269
Total.....	8,066

Photographs taken during the year:

Photographs taken at Board of Health Laboratory.....	18
Photographs taken of lepers at Palo Seco.....	150
Total.....	168

CHEMICAL ANALYSES AND EXAMINATIONS.

Abdominal fluid, protein.....	1	
Beverages.....	10	
Beer, complete analysis.....	5	
Beer for alkaloids.....	1	
Beverage, "Sidra," alcoholic content.....	1	
Liquor, alcoholic content.....	1	
Whiskey.....	2	
Blood analyses.....	1,026	
Nonprotein nitrogen determinations.....	244	
Urea nitrogen determinations.....	592	
Uric acid determinations.....	578	
Creatinin determinations.....	592	
Glucose determinations.....	927	
Carbon dioxide determinations.....	18	
Sodium chloride determinations.....	2	
Cholesterol determinations.....	1	
Calcium determinations.....	2	
Phosphorus determinations.....	2	
Ammonia determinations.....	1	
Chlorides.....	1	
Spectroscopic.....	2	
Boiler scale.....		1
Calculus, appendiceal.....		1
Calculus, submaxillary.....		1
Calibration of sphygmomanometers.....		3
Drugs and chemicals.....		13
Acetone.....	1	
Alcohol, denatured.....	1	
Alcohol rub.....	1	
Bay rum.....	2	
Bleaching powder.....	1	
Carbolic acid, crude.....	1	
Eosin.....	1	
Formaldehyde.....	1	
Paraffin.....	2	
Quinine sulphate.....	2	
Electrolyte.....		1
Feces.....		1
Food stuffs.....		302
Bran.....	3	
Buttermilk.....	1	
Cream.....	3	
Honey.....	2	
Milk, dairy.....	272	
Milk, evaporated.....	9	
Milk, condensed.....	1	
Milk, unevaporated.....	1	
Milk, mother's.....	7	
Nuts.....	1	
Rice.....	2	
Gasoline.....		3
Gastric analyses.....		99
Gauze, cotton.....		1
Glass, powdered.....		1
Pathological specimens.....		2
Kidney tumor (fat).....	1	
Scrapings from knee.....	1	
Silver coin.....		1
Spinal fluids examined.....		557
Colloidal gold.....	546	
Ammonium sulphate.....	530	
Phenol.....	512	
Glucose.....	7	
Urea nitrogen.....	5	
Uric acid.....	5	
Creatinin.....	5	
Substances for identification.....		23
Cocaine.....	16	
Emetine.....	1	
Opium.....	2	
Bleaching powder.....	1	
Zinc sulphate.....	1	
Sodium carbonate and sodium chloride.....	1	
Phenyl salicylate, mercurous chloride and strychnine.....	1	
Tooth paste.....		2
Toxicological examinations.....		5
Chem. No. 8342. Stomach contents. Mercury not found.....	1	
Chem. No. 8749. Stomach contents. Mercury found.....	1	
Chem. No. 9187. Stomach contents. Alcohol not found.....	1	
Chem. No. 9599. Stomach contents. Salicylic acid found.....	1	
Chem. No. 9667. Viscera. Strychnine found.....	1	

CHEMICAL ANALYSES AND EXAMINATIONS.—Continued.

Urines examined.....		470
Routine analysis.....	234	
Glucose determinations.....	209	
Globulin and albumin determinations.....	1	
Albumin determinations.....	2	
Diacetic acid determinations.....	1	
Lead determinations.....	9	
Nitrogen determinations.....	24	
Urea determinations.....	4	
Chloride determinations.....	1	
Leucin and tyrosin determinations.....	1	
Water.....		4
Alcohol recovered, liters.....		146
Aniline oil recovered, cc.....		400
Esters of cod liver oil prepared, cc.....		790
Ethyl esters of chaulmoogric acids prepared, liters.....		51
Ethyl esters of morrhuc acids prepared, cc.....		930

UNDERTAKING DEPARTMENT.

Bodies received (6 disinterred).....	409
Bodies embalmed.....	71
Bodies cremated.....	107
Bodies buried on the Isthmus.....	235
Bodies shipped from Isthmus.....	65

TABLE 1.—DISCHARGES FROM HOSPITALS, DEATHS, AND NONEFFECTIVE RATES FOR EMPLOYEES.

ABSOLUTE NUMBERS.

	Average number of employees.	Discharges from hospitals.			Deaths.			Days treatment in hospitals and quarters.	Average number sick per day.
		Total.	Disease.	External causes.	Total.	Disease.	External causes.		
Year 1924:									
White.....	3,055	583	544	39	19	13	6	15,229	41.72
Black.....	8,570	1,179	971	208	65	51	14	42,079	115.28
Totals.....	11,625	1,762	1,515	247	84	64	20	57,308	157.00
Year 1923:									
White.....	2,846	532	483	49	17	15	2	14,301	39.18
Black.....	8,130	1,179	982	197	56	52	4	40,899	112.05
Totals.....	10,976	1,711	1,465	246	73	67	6	55,200	151.23

ANNUAL AVERAGE PER 1,000 EMPLOYEES.

Year 1924:									
White.....	190.84	178.07	12.77	6.22	4.26	1.96		13.66	
Black.....	137.57	113.29	24.28	7.58	5.95	1.63		13.45	
Totals.....	151.57	130.32	21.25	7.23	5.51	1.72		13.51	
Year 1923:									
White.....	186.93	169.71	17.22	5.97	5.27	.70		13.77	
Black.....	145.02	120.79	24.23	6.89	6.40	.49		13.78	
Totals.....	155.90	133.48	22.42	6.65	6.10	.55		13.78	

TABLE II.—CAUSES OF DEATH OF EMPLOYEES ARRANGED WITH REFERENCE TO COLOR, AGE, AND LENGTH OF RESIDENCE ON ISTHMUS.

	Colr.		Age (in years).								Length of residence on Isthmus (in years).								Un- known.	Life.				
	Total deaths.	White.	Black.	15-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-65	66-75	1-2	2-3	3-4	4-5	5-6			6-7	7-8	8-10	10-15	Over 15
Malarial fever, estivoautumnal	1	1										1										1		
Hemoglobinuric fever, malarial	1		1																					
Tuberculosis of the lungs	11	1	10			2	1	4	2	2							1				2	5	2	
Acute miliary tuberculosis	3																							
Syphilis, tertiary	2	1	1					1																
Cancer of the stomach	2	1	1																					
Cancer of the throat	2	1	1																					
Cancer of intestines and rectum	2	1	1																					
Cerebral hemorrhage, apoplexy.	2	1	1				1	3													1			
General paralysis of the insane.	1	1										1									1			
Angina pectoris	1	1						1																
Malignant endocarditis	1																							
Acute endocarditis	3	3					1	1	1	1											1			
Other organic diseases of the heart.	6	3	3					2	1	1	2										1	3		
Varices	1	1																						
Arterio-sclerosis	1	1																						
Lobar pneumonia	5	1	4				1	2	1	1														
Gangrene of the lungs	1																							
Other diseases of the respiratory system.	2	1	1					1	1															
Acute appendicitis	1																							
Duodenal ulcer	1	1						1	1															
Intestinal obstruction	1	1																						
Other diseases of the intestines.	1																							
Chronic nephritis.	7	1	6			1	1		2	3		1									1			
Cholecystitis.	1	1																						
Other diseases of the digestive system.	1																							
Arsenic poisoning	1					1																		
Accidental drowning	1																							
Suicide by drowning	1	1	1			1	1	2						1										
Suicide by poisoning	1																							
Traumatism by machines	1	1	1				1																	
Traumatism by crushing	3	1	2					1	2															
Railroad traumatism	1	1				1																		
Traumatism by fall	3	1						3																
Absorption of deleterious gases	4					1	1	2																
Effects of heat	1	1	1					1		1														
Burns	1																							
Totals	84	19	65			7	10	27	15	9	11	4		1	3	1		1		2	2	17	30	2

TABLE III.—DEATHS OF RESIDENTS AND DEATH RATES, OF THE CANAL ZONE AND THE CITIES OF PANAMA AND COLON.

Place.	Popula- tion.	Deaths.			Annual rate per 1,000 population.		
		Total.	Disease.	External causes.	Total.	Disease.	External causes.
Year 1924:							
Panama.....	59,635	1,168	1,128	40	19.59	18.92	.67
Colon.....	31,285	475	455	20	15.18	14.54	.64
Canal Zone.....	33,723	365	270	35	9.05	8.01	1.04
Totals.....	124,643	1,948	1,853	95	15.63	14.87	.76
Year 1923:							
Panama.....	59,635	1,106	1,078	28	18.55	18.08	.47
Colon.....	31,285	393	377	16	12.56	12.05	.51
Canal Zone.....	31,793	253	227	26	7.96	7.14	.82
Totals.....	122,713	1,752	1,682	70	14.28	13.71	.57

TABLE IV.—DEATHS OF RESIDENTS OF THE CANAL ZONE AND THE CITIES OF PANAMA AND COLON, BY CAUSE, SEX, COLOR, AGE, AND PLACE OF RESIDENCE, 1924.

Cause of death.	Total deaths.	Sex.		Color.			Age (in years).										Place of residence.				
		M.	F.	W.	B.	Y.	Under 1 year.	1-4	5-10	11-20	21-30	31-40	41-50	51-60	61-75	76-100	Age un- known	Pan- ama.	Colon.	Canal Zone.	
General diseases.																					
Typhoid fever	2	1	1		2					1								1	1		
Malarial fever, Estivoautumnal	17	12	5	10	6	1		3	2	2	2	0	1	1				3	3	11	
Malarial fever, Quartan	1									1											
Malarial fever, undetermined	5	4	1	2	3						3	1		1				2	3		
Hemoglobinuric fever, malarial	2	2		1	1					1								1			
Measles	9	7	2	1	8			7		1	1	1						4	2	3	
Whooping cough	3	3		1	2		1		2									2	1		
Diphtheria and croup	7	6	1	1	7			6	1									7			
Induenza	3	1	2	1	2			1													
Dysentery, Entamoebic	11	7	4	2	9			4	1	2	3		1					6	5	2	
Dysentery, Bacillary	5	1	4		5			2					1					1	1		
Dysentery, unclassified	2	2			2																
Leptosy	1	1			1						1							1	1		
Erysipelas	2	1	1		2					2											
Hemoglobinuric fever, unqualified	2	2			2													1	1		
Purulent infection and septicemia	1	1			1						1							1	1		
Pyemia	1				1																
Septicemia	5	2	3	1	4		2	1	1			2						1	3	2	
Tetanus	2	2		1	1													2			
Pellagra	16	3	13		16					1	4	6	4	1				9	6	1	
Berberia	1	1			1																
Tuberculosis of the lungs	276	137	139	19	249	8	4	11	5	29	73	74	47	18	13	2		177	71	28	
Acute military tuberculosis	15	13	2	1	13	1	1	6	1					2	1			5	5	5	
Chronic military tuberculosis	5	2	3	1	4		1	3	1									3	2		
Abdominal tuberculosis	4	4			4			1	2			1						2	2		
Pott's disease	1	1			1			1										1	1	1	
Tuberculosis of bones and joints	2	1	1		2				1		1										
Tuberculosis of the larynx	1	1			1													1	1		
Disseminated tuberculosis	3	3	1		3				2									1	3		
Rickets	4	3	1	1	3		2	2										3			
Syphilis, tertiary	11	7	4		10	1						3	5	2	1			1	1	2	
Syphilis, hereditary	7	4	3		7		5	1										4	3	4	
Syphilis, period not stated	10	8	2		10							4	2	3	1			5	2		
Cancer and other malignant tumors of the buccal cavity	5	2	2	2	3					1								3	1	1	
Cancer and other malignant tumors of the stomach and liver	21	12	9	5	16							3	4	11		3		11	5	5	
Cancer and other malignant tumors of the periton- eum, intestines, rectum	4	3	1	2	2							1			2			2	1	1	
Cancer and other malignant tumors of the female genital organs	21			1	20							6		5	4			12	4	5	

Cancer and other malignant tumors of the breast.....	7	1	7	2	5							3	2	1	5	2	
Cancer and other malignant tumors of the skin.....	22	13	9	2	19	1									16	5	1
Cancer and other malignant tumors of other organs and of organs not specified.....	7	2	5	2	5										4	1	2
Diabetes.....	1	1	1	1	1										1		
Exophthalmic goiter.....	1	1	1	1	2										1		
Addison's disease.....	2	1	1	1	1										1		
Leukemia.....	1	1	1	1	1										1		
Leukemia lymphatic.....	1	1	1	1	1										1		
Hodgkin's disease.....	1	1	1	1	1										1		
Anemia, primary, pernicious.....	3	2	1	1	2										1		
Other general diseases.....	1	1	1	1	1										1		
Alcoholism.....	2	2	1	1	1										1		
Alcoholism, acute.....	1	1	1	1	1										1		

*Diseases of the nervous system and of the organs of
special sense.*

Enecephalitis.....	2	7	2	1	1							1			2		1
Simple meningitis.....	13	1	6	2	11							1			10	2	
Cerebro-spinal fever.....	5	4	1	1	5							1			3		2
Pneumococcus meningitis.....	2	1	1	1	1							1			1		1
Locomotor ataxia.....	1	1	1	1	1							1			1		
Other diseases of the spinal cord.....	48	32	16	5	43							1			20	22	6
Cerebral hemorrhage, apoplexy.....	4	3	1	1	3							1			3		1
Softening of the brain.....	2	1	1	1	2							2			2		7
Paralysis without specified cause.....	10	7	3	1	10							1			1	2	1
General paralysis of the insane.....	1	1	1	1	1							1					
Dementia precox.....	1	1	1	1	1							1			1		1
Other forms of mental alienation.....	1	1	1	1	1							1			1		5
Epilepsy.....	6	4	2	3	3							1			1		
Convulsions of infants (under 5 years of age).....	1	1	1	1	1							1			1		
Chorea.....	1	1	1	1	1							1			1		
Neuritis.....	1	1	1	1	1							1			1		1
Other diseases of the nervous system.....	1	1	1	1	1							1			1		1
Otitis media.....	1	1	1	1	1							1					

Diseases of the circulatory system.

Pericarditis.....	3	3	3	1	1							1			1	2	2
Acute endocarditis.....	5	4	1	1	5							1			2		1
Malignant endocarditis.....	5	4	1	1	4							1			2		1
Organic diseases of the heart.....	127	82	45	27	98							12			77	38	12
Angina pectoris.....	7	4	3	4	2							1			1	1	1
Aneurysm.....	14	7	7	4	14							6			9	5	4
Atherosclerosis.....	13	8	5	1	17							2			6	3	4
Other diseases of the arteries, arteroma, etc.....	17	5	2	1	7							1			5	2	
Embolism and thrombosis.....	1	1	1	1	1							1			1		1
Varices.....	1	1	1	1	1							1			1		1
Diseases of the lymphatic system (lymphangitis, etc.).....	1	1	1	1	1							1			1		2
Hemorrhage, other diseases of the circulatory system.....	3	2	1	2	1							1			1		

TABLE IV.—DEATHS OF RESIDENTS OF THE CANAL ZONE AND THE CITIES OF PANAMA AND COLON, BY CAUSE, SEX, COLOR, AGE, AND PLACE OF RESIDENCE, 1924.—Contd.

Cause of death.	Sex.		Color.			Age (in years).										Place of residence.				
	Total deaths.	M.	F.	W.	B.	Y.	Under 1 year.	1-4	5-10	11-20	21-30	31-40	41-50	51-60	61-75	76-100	Age unknown	Panama.	Colon.	Canal Zone.
<i>Diseases of early infancy.—Continued.</i>																				
Atrophy of infants.....	1	1			1		1	8										1		
Malnutrition.....	26	13	13	1	25		18											6	11	9
Other causes peculiar to early infancy (including various consequences of labor)	50	29	21	7	42	1	50											31	9	10
<i>Old age.</i>																				
Senility.....	12	4	8	3	9										5	7		7	3	2
<i>Affections produced by external causes.</i>																				
Suicide by poisoning.....	2	1	1	1	1							1	1					1		1
Suicide by drowning.....	4	3	1	1	3						1	2			1			1	1	3
Suicide by firearms.....	3	3		3				2			3							1	2	1
Other acute poisonings.....	4	3	1	1	3			3		1		1						1	1	4
Burns (conflagration excepted).....	6	3	3	1	5			3	1			1	1					2		
Absorption of deleterious gases (conflagration excepted).....	6	5	1		6				1		1	4						4	2	
Accidental drowning.....	17	17		6	11				2	2	2	8	2				1	5	4	8
Traumatism by firearms.....	12	2		1	1						2							1		1
Traumatism by fall.....	16	10	6	4	12			2	2		3	6	2			1		11	3	2
Traumatism by machines.....	1	1																		1
Traumatism by other crushings.....	19	19		6	12	1			3	3	2	3	6	2				8	4	7
Railroad traumatism.....	2	2		1	1						1	1	1						1	1
Effects of heat.....	1	1																		
Homicide by firearms.....	8	7	1	7	1						2	5	1					1	3	3
Homicide by cutting or piercing instruments.....	2	1	1	1	1						1	1						1		1
Homicide by other means.....	1	1										1								
Other external violence.....	1	1		1							1							1		
<i>Ill defined diseases.</i>																				
Sudden death.....	2	1	1	1	1		1									1		2		
Causes of death not specified or ill-defined.....	28	15	13	3	25		12	6	2		2	3		1	2			14	6	8
Infections of undetermined origin.....	2	1	1		2			1			1							1	1	
Totals.....	1,948	1,125	823	263	1,654	31	442	250	53	87	206	313	237	159	143	53	5	1,168	475	305

TABLE V.—DEATHS OF NONRESIDENTS, BY CAUSE, SEX, COLOR, AND AGE, 1924.

Cause of death.	Total deaths	Sex.		Color.		Age (in years).										Un- known
						Less than 1 year	1-4	5-10	11-20	21-30	31-40	41-50	51-60	61-75	76-80	
		M.	F.	W.	B.											
Typhoid fever.....	4	4		4					3			1				
Malarial fever, estivoautumnal.....	2	1	1		2					2	1					
Malaria, undetermined.....	8	6			8											
Malarial fever, clinical.....	1		1		1											
Hemoglobinuric fever, malarial.....	1		1		1							1				
Dysentery entamebic.....	1	1			2											
Dysentery, bacillary.....	5	4	1	1	5					1	1	2				
Septicemia.....	1	1														
Tetanus.....	23	18	5		23	1			3	3	5	6	3	2		
Tuberculosis of the lungs.....	2	2			2				2							
Acute military tuberculosis.....	1		1		1				1							
Tuberculosis meningitis.....	1	1		1												
Abdominal tuberculosis.....	1	1		1												
Gonorrheal orchitis and epididymitis.....	3	3		1	2					1						
Cancer of the stomach and liver.....	1		1	1												
Cancer of the intestines.....	1		1		1											
Cancer of the female genital organs.....	6	4	2	2	4				1		1	2	1		1	
Cancer of other organs and organs not specified.....	3	3		3												
Diabetes.....	1	1		1												
Encephalitis.....	1		1		1				1							
Simple meningitis.....	3	2	1	1	2						1	1		1		
Cerebral hemorrhage, apoplexy.....	1	1														
Softening of the brain.....	1	1			1						1	1				
Epilepsy.....	1	1														
Acute endocarditis.....	2	1	1	2					1	4	1	3	4	3	2	
Organic diseases of the heart.....	19	17	2	7	12							1				
Aneurysm.....	1	1		1												
Arterio-sclerosis.....	1	1			1											
Other diseases of the arteries.....	1	1														
Broncho-pneumonia.....	3	3			3											
Pneumonia (unqualified).....	9	5	4		9											
Lobar pneumonia.....	13	13		4	9											
Pleurisy.....	2	2		1	1											
Empyema.....	1	1		1												
Abscess of lungs.....	1	1														
Diarrhea and enteritis.....	5	4	1	1	4		3									
Colitis.....	1	1		1												
Ankylostomiasis.....	1	1		1												
Intestinal obstruction.....	1		1													
Other diseases of the intestines.....	1	1		1												
Dysenteric ulcer.....	1	1		1												
Cirrhosis of the liver.....	1	1		1												
Biliary calculi.....	1	1		1												

TABLE V.—DEATHS OF NONRESIDENTS, BY CAUSE, SEX, COLOR, AND AGE, 1924.—Continued.

Cause of death.	Total deaths.	Sex.		Color.		Age (in years.)								Un- known		
		Sex.		Color.		Less than 1 year	1-4	5-10	11-20	21-30	31-40	41-50	51-60		61-75	76-80
		M.	F.	W.	B.											
Abscess of liver (unqualified).....	2	2			2						1	1				
Cholecystitis.....	1	1			1						1					
Other diseases of the digestive system.....	1	1			1											
Chronic nephritis.....	10	6	4	1	9				1	3	1	3	1	1		
Pyelo-nephrosis.....	2	1	1		2											
Cystitis.....	1	1			1											
Puerperal hemorrhage.....	2		2		2						1					
Eclampsia.....	1		1		1						1					
Other accidents of labor.....	1		1		1						1					
Gangrene.....	2	2			2									2		
Mastoid abscess.....	1	1		1	2						1					
Premature birth.....	2		2		2		2									
Burns.....	2	1	1		2		2									
Absorption of deleterious gases.....	1	1		1					1							
Accidental drowning.....	8	8		5	3				2	1	5					
Traumatism by fall.....	2	2		1	1					1	1					
Traumatism by crushing.....	3	3			3				1	2						
Other external violence.....	1	1		1										1		
Not specified or ill-defined.....	17	7	10		17		5	3	1	1		1	2	1	2	
Infections of undetermined origin.....	1		1		1		1									
Totals.....	200	149	51	46	154	12	13	6	19	33	34	40	26	42	5	

TABLE VI.—STATISTICS REGARDING AMERICAN EMPLOYEES AND THEIR FAMILIES, 1924.

	Annual death rate per 1,000 population.
White employees from the United States:	
Disease.....	4.14
External causes.....	1.88
Total.....	6.02
White women and children from the United States:	
Disease.....	7.03
External causes.....	1.10
Total.....	8.13
White employees from the United States and their families:	
Disease.....	5.97
External causes.....	1.39
Total.....	7.36
Number of American children born on Isthmus during the year.....	180
Deaths among American children under 1 year of age.....	9
Infant mortality rate among American children (number of deaths per 1,000 live births).....	50.00

TABLE VII.—BIRTHS AND BIRTH RATES IN THE CANAL ZONE AND THE CITIES OF PANAMA AND COLON.

Place.	Population.	Births.			Rate per 1,000 population.		
		Total.	Alive.	Still-born.	Total.	Alive.	Still-born.
Year 1924:							
Panama.....	59,635	2,271	2,144	127	38.08	35.95	2.13
Colon.....	31,285	726	690	36	23.21	22.06	1.15
Canal Zone.....	33,723	730	694	36	21.65	20.58	1.07
Totals.....	124,643	3,727	3,528	199	29.90	28.30	1.60
Year 1923:							
Panama.....	59,635	2,163	2,043	120	36.27	34.26	2.01
Colon.....	31,285	748	709	39	23.91	22.66	1.25
Canal Zone.....	31,793	623	591	32	19.60	18.59	1.01
Totals.....	122,713	3,534	3,343	191	28.80	27.24	1.56

TABLE VIII.—INFANT MORTALITY RATES IN THE CANAL ZONE AND THE CITIES OF PANAMA AND COLON.

Place.	Live births.			Deaths among children under 1 year of age.	
	Male.	Female.	Total.	Number.	Rate per 1,000 live births.
Year 1924:					
Panama.....	1,120	1,024	2,144	296	138.06
Colon.....	344	346	690	79	114.49
Canal Zone.....	369	325	694	67	96.54
Totals.....	1,833	1,695	3,528	442	125.28
Year 1923:					
Panama.....	1,048	995	2,043	290	141.95
Colon.....	370	339	709	82	115.66
Canal Zone.....	315	276	591	43	72.76
Totals.....	1,733	1,610	3,343	315	94.23

TABLE IX.—TABLE SHOWING DISCHARGES AND DEATHS IN HOSPITALS OF THE PANAMA CANAL, 1924.

Diseases.	Total dis- charges.	Total deaths.	Employees.		Nonemployees.			Non- residents.		
			White.	Black.	White.		Black.	White.	Black.	
					Army.	Others				
<i>General diseases.</i>										
Typhoid fever.....	10					1	4	5		
Relapsing fever.....	2						1	1		
Malarial fever, Estivoautumnal.....	358	11	32	90	33	34	172	8		
Malarial fever, Tertian.....	145		14	30	19	23	55	3	1	
Malarial fever, Quartan.....	10			2	2	1	5			
Malarial fever, mixed.....	4						3			
Malarial fever, undetermined.....	2		1					1		
Malarial fever, Clinical.....	25		2	2	5	6	7	3		
Malarial fever, Cachexia.....	2					1		1		
Vaccinia.....	4					4				
Measles.....	166	4		6	19	49	89	5	2	
Scarlet fever.....	3					2		1		
Whooping cough.....	7					3	4			
Diphtheria and croup.....	6			1	1	2	2			
Croup.....	1					1				
Influenza.....	91	1	23	11	8	38	6	5	1	
Dysentery, Entamebic.....	12				1	5	2	4		
Dysentery, Bacillary.....	4	6	1	1			7	1		
Dysentery, unclassified.....	8				2		4	2		
Leprosy.....	3		2				1			
Erysipelas.....	5	1	1			3	1	1		
Dengue.....	3					2		1		
Chicken pox.....	42			21	1	3	16	1		
German measles.....	3					1	2			
Mumps.....	70			1	68	1		1		
Hemoglobinuric fever, unqualified.....		1		1						
Filariasis.....	1						1			
Other epidemic diseases.....	4					2	2			
Purulent infection and septicemia.....	3	1	1		1	1		1		
Septicemia.....		3				1	1	1		
Tetanus.....		1				1				
Mycosis.....	1						1			
Actinomycosis.....	1						1			
Pellagra.....	4	3					7			
Beriberi.....	8					2	3	2	1	
Tuberculosis of the lungs.....	65	30	5	19	17	9	35	9	1	
Acute miliary tuberculosis.....	1	9		1			8	1		
Tuberculous meningitis.....		2					2			
Abdominal tuberculosis.....	5					1	2	2		
Tuberculosis of bones and joints.....	6	1			1		6			
Tuberculosis of other organs.....	5					2	2	1		
Tuberculosis of the skin.....	1			1						
Tuberculosis of the lymph glands.....	6			2	1	1	2			
Rickets.....	6						6			
Syphilis, primary.....	6			1	3			2		
Syphilis, secondary.....	19		1	1	3	1	4	9		
Syphilis, tertiary.....	97	5	3	34	4	5	47	8	1	
Syphilis, cerebro-spinal.....	34	1	5	8	8	3	7	4		
Syphilis, hereditary.....	5	1				1	5			
Syphilis, period not stated.....	41		1	22	4	1	9	3	1	
Gonococcus infection.....	20					5	14	1		
Gonorrhea.....	215		13	64	35	12	28	60	3	
Gonorrheal arthritis.....	5			1	2		1	1		
Gonorrheal bubo.....	3			2	1					
Gonorrheal orchitis and epididymitis.....	2			1		1				
Gonorrheal ophthalmia.....	6			1			5			
Soft chancre.....	110		5	30	17	1	25	23	9	
Adenitis chancreoidal.....	6			1	1		2	2		
Cancer and other malignant tumors of the buccal cavity.....	1	1				1	1			
Cancer and other malignant tumors of the stomach and liver.....	6	4		3		2	3	2		
Cancer and other malignant tumors of the peritoneum intestines, rectum.....	2	1		1	1	1				
Cancer and other malignant tumors of the female genital organs.....	5	3	1			1	6			
Cancer and other malignant tumors of the breast.....	10					1	9			
Cancer and other malignant tumors of other organs and of organs not specified.....	4	3		4		1	1	1		

TABLE IX.—SHOWING DISCHARGES AND DEATHS IN HOSPITALS OF THE PANAMA CANAL, 1924—Continued.

Diseases.	Total dis- charges.	Total deaths.	Employees.		Nonemployees.			Non- residents.		
			White.	Black.	White.		Black.	White.	Black.	
					Army.	Others				
General diseases.—Continued.										
Other tumors (tumors of the female organs ex- cepted).....	16			2	4	2	5	3		
Acute articular rheumatism.....	11			2	3	3		3		
Chronic rheumatism and gout.....	6		1	1		2	1	1		
Gout.....	1		1							
Arthritis deformans.....	1				1					
Diabetes.....	30	1	2	3		1	17	7	1	
Exophthalmic goiter.....	3					1		1		
Addison's disease.....		1			1					
Leukemia lymphatic.....		1								
Hodgkin's disease.....	1						1			
Anemia, primary, pernicious.....	2	1			1		1			
Anemia, secondary, cause not determined.....	3				1		2	1		
Other general diseases.....	20	1	1			6				
Alcoholism (acute or chronic).....	13		1		5	3		4		
Alcoholism, acute.....	21	1	3		11	5		3		
Alcoholism, chronic.....	3		1		1	1				
Alcoholic psychosis.....	8		1		3	1	3			
Chronic lead poisoning.....	1			2						
Other chronic poisonings.....	1						1			
Drug habit.....	2				1			1		
Diseases of the nervous system and of the organs of special sense.										
Encephalitis.....	2				1	1				
Simple meningitis.....	1	2		1			2			
Cerebro-spinal fever.....	3					1	2			
Locomotor ataxia.....	7	1	1			4	2	1		
Other diseases of the spinal cord.....	5		1			3		1		
Acute anterior polio-myelitis.....	7					3	4			
Cerebral hemorrhage, apoplexy.....	4	8	1	4		3	4			
Softening of the brain.....		1					1			
Paralysis without specific cause.....	9		1	1	1	1	2	3		
General paralysis of the insane.....	13	7		1	1	3	11	4		
Dementia precox.....	74	1		3	14	14	39	5		
Manic depressive psychosis.....	9				2	1	5	1		
Toxic psychosis.....	4	1					3	1	1	
Other forms of mental alienation.....	28	2	2	1	6	6	13	2		
Epilepsy.....	13			2		5	6			
Convulsions, nonpuerperal (5 years and over).....	3	1	1	1		1	1			
Convulsions of infants (under 5 years of age).....	10	1				5	6			
Chorea.....	1			1						
Hysteria.....	35		1	1	11	9	10	3		
Neuralgia.....	2					1	1			
Neuritis.....	36		12	5	7	6	3	3		
Imbecility.....	7					3	4			
Organic disease of the brain.....	2					1	1			
Neurasthenia.....	34		4		6	13	6	5		
Other diseases of the nervous system.....	38		6	2	7	13	5	5		
Follicular conjunctivitis.....	27		2	9	5	2	8	1		
Trachoma.....	1							1		
Disease of Cornea.....	42		2	16	9	1	11	3		
Disease of Iris.....	19		2	8	2	1	6			
Disease of Lens.....	19		4	3	2	2	7	1		
Disease of Fundus.....	21		1	6	5	1	7	1		
Other diseases of the eyes and their annexa.....	109		4	26	27	1	44	7		
Otitis, external.....	36		2	3	15	7	8	1		
Otitis media.....	75	1	2	4	29	13	19	9		
Other diseases of the ears.....	13		2		6	2	2	1		
Diseases of the circulatory system.										
Pericarditis.....	2	1			1		1	1		
Acute endocarditis.....	4			2		2	3	1		
Malignant endocarditis.....		3		1	1					
Organic diseases of the heart.....	40	16	7	10	5	6	24	4		
Angina pectoris.....	1				1					
Aneurism.....	4	1		3				2		

TABLE IX.—SHOWING DISCHARGES AND DEATHS IN HOSPITALS OF THE PANAMA CANAL, 1924—Continued.

Diseases.	Totals dis- charges.	Total deaths.	Employees.		Nonemployees.			Non- residents.	
			White.	Black.	White.		Black.	White.	Black.
					Army.	Others			
<i>Diseases of the circulatory system.—Continued.</i>									
Arterio-sclerosis.....	31	2	2	6	2	6	17		
Other diseases of the arteries, atheroma, etc.....	7	2		3		1	4	1	
Hemorrhoids.....	77		9	19	24	10	9	6	
Varices.....	9	1	2	4		2	1	1	
Varicocele.....	5			1	3	1			
Phlebitis.....	2			1			1		
Other diseases of the veins.....	3		1			1			
Lymphadenitis (nonvenereal).....	79		3	15	18	8	19	16	
Other diseases of the lymphatic system.....	24		2	4	6	5	5	1	1
Hemorrhage; other diseases of the circulatory system.....	17	2	2	4	2	6	5		
<i>Diseases of the respiratory system.</i>									
Adenoid vegetations.....	194				1	90	103		
Other diseases of the nasal fossae.....	121		13	8	59	22	12	7	
Laryngitis.....	6				1	1	3	1	
Other diseases of the larynx.....	1				1				
Diseases of the thyroid body.....	9	1	1			5	3	1	
Acute bronchitis.....	235		23	16	43	58	76	17	2
Chronic bronchitis.....	13		1	1	4	3	3	1	
Broncho-pneumonia.....	38	11		1	2	5	41		
Pneumonia (unqualified).....	1	1				1	1		
Lobar pneumonia.....	36	18	1	10	6	5	27	3	2
Pleurisy.....	39	1	5	12	2	8	6	7	
Empyema.....	4	1		2	1	1	1		
Gangrene of the lungs.....		1		1					
Asthma.....	32		5	2	5	12	5	2	1
Other diseases of the respiratory system (tubercu- losis excepted).....	19	1	5	5	3	3	2	2	
Abscess of lungs.....	1			1					
<i>Diseases of the digestive system.</i>									
Diseases of the teeth and gums.....	41		4	3	8	6	11	9	
Stomatitis.....	5					3	2		
Other diseases of the mouth and annexa.....	12			1	3	2	5	1	
Pharyngitis.....	32	1	4	5	2	11	11		
Follicular tonsillitis.....	592		56	33	109	156	229	9	
Other diseases of the pharynx.....	49		6	5	11	14	12	1	
Foreign body in the esophagus.....	2			1		1			
Ulcer of the stomach.....	24		4	5	4	4	2	5	
Gastrectasis.....	1				1				
Acute gastritis.....	26		5	2	5	3	4	7	
Chronic gastritis.....	9		1	1	3		2	2	
Acute indigestion.....	16		1	1	6	1	6	1	
Other diseases of the stomach (cancer excepted).....	26		10		3	5	5	3	
Diarrhea and enteritis (under 2 years).....	20	4		5		7	12		
Colitis.....	28				1	20	7		
Diarrhea and enteritis (2 years and over).....	61	2	10	12	4	11	18	8	1
Colitis.....	19			1	1	9	7	1	
Ankylostomiasis.....	28			4	1	9	13	1	
Ascariasis.....	23		1		1	11	7	2	1
Teniasis.....	7					3	1	3	
Strongyloidosis.....	2				1				
Other intestinal parasites.....	3					3			
Acute appendicitis.....	136	3	10	4	87	20	10	7	
Chronic appendicitis.....	83		9	4	35	24	6	5	
Hernia, intestinal obstructions.....	3	1		1			3		
Inguinal hernia.....	123	1	8	35	33	13	24	10	
Other hernias.....	14		2		1	2	4	5	
Intestinal obstruction.....	3	1	3				1		
Constipation.....	58		5	6	8	14	18	6	
Duodenal ulcer.....	5	1		3	2		1		
Other diseases of the intestines.....	62	2	9	10	14	16	12	3	
Acute yellow atrophy of the liver.....	3	2			1	1	3		
Cirrhosis of the liver.....	3					2		1	
Biliary calculi.....	12		1		1	7	1	2	
Abscess of liver (unqualified).....	1							1	
Cholecystitis.....	27	1	5	2	3	11	5	2	
Other diseases of the liver.....	25		5	1	6	2	7	4	
Simple peritonitis (nonpuerperal).....	6	4	2	1	3	3		1	

TABLE IX.—SHOWING DISCHARGES AND DEATHS IN HOSPITALS OF THE PANAMA CANAL, 1924—Continued.

Diseases.	Total dis- charges.	Total deaths.	Employees.		Nonemployees.			Non- residents.		
			White.	Black.	White.		Black.	White.	Black.	
					Army.	Others				
<i>Diseases of the digestive system.—Continued.</i>										
Other diseases of the digestive system (cancer and tuberculosis excepted).....	17		1	3	5	4	4			
<i>Nonvenereal diseases of the genito-urinary system and annæxæ.</i>										
Acute nephritis.....	24	2	1	3	4	7	9	2		
Bright's disease (chronic nephritis).....	32	11	4	16	1	6	10	5		1
Chyluria.....	1	3		1		1	2			
Movable kidney.....	2		1		1					
Pyelo-nephrosis.....	21			1	2	4	14			
Other diseases of the kidney and annæxæ.....	85	1	6	2	13	29	33	3		
Calculi of the urinary passages.....	20		6	4	2	5		3		
Cystitis.....	29		6	7	6	8	1	1		
Other diseases of the bladder.....	7		2	2		1	1	1		
Stricture of the urethra, nonvenereal.....	34		6	17		4	3	3		1
Vesico-vaginal fistula.....	3			3						
Other diseases of the urethra, urinary abscess, etc.	11		1	6		2		2		
Chronic prostatitis.....	4			1	2			1		
Hypertrophy of prostate.....	5	1		3	1	2				
Other diseases of the prostate.....	2				1		1			
Nonvenereal diseases of the male genital organs.....	41		2	16	9	4	6	3		1
Hydrocele.....	26		2	14	6		2	2		
Uterine hemorrhage (nonpuerperal).....	13	1				6	7	1		
Uterine tumor (noncancerous).....	50		2	1		6	38	3		
Metritis.....	1					1				
Other diseases of the uterus.....	95		2	1		42	46	4		
Cysts and other tumors of the ovary.....	15					6	8	1		
Salpingitis and other diseases of the female genital organs.....	131	2	2	5		29	95	2		
Benign tumor of breast.....	3					2	1			
Nonpuerperal diseases of the breast (cancer excepted).....	8		1			4	3			
<i>The puerperal state.</i>										
Normal labor.....	439					182	256	1		
Accidents of pregnancy.....	61	1				27	35			
Extra-uterine pregnancy.....	10		1			1	9			
Hyperemesis gravidarum.....	14		1			4	9			
Abortion.....	83	2		1		45	39			
Puerperal hemorrhage.....	3	1					4			
Other accidents of labor.....	59			1		33	25			
Puerperal septicæmia.....	2	1					3			
Puerperal albuminuria and convulsions.....	10	4					8			
Eclampsia.....	1	4				1	4			
Following childbirth (not otherwise defined).....	25						25			
Puerperal diseases of the breast.....	18			1		7	10			
<i>Diseases of the skin and of the cellular tissue.</i>										
Gangrene.....	1				1					
Raynaud's disease.....	1				1					
Furuncle.....	15		4	1	4	1	2			1
Carbuncle.....	8		1	2	3	1		1		
Acute abscess.....	92		7	6	13	21	31	14		
Phlegmon and cellulitis.....	81		7	26	11	8	21	7		1
Trichophytosis.....	10		1	5	1	1	2			
Scabies.....	4					1	2	1		
Mycetoma.....	1					1				
Elephantiasis.....	2			1				1		
Dhobie itch.....	6		2				4			
Ulcer of the skin.....	18			4		1	10	3		
Impetigo contagiosa.....	10					4	4	1		1
Urticaria.....	2						1			
Ingrowing nail.....	13		3	1	6	3				
Other diseases of the skin and annæxæ.....	60		7	4	15	11	9	13		1
<i>Diseases of the bones and of the organs of locomotion.</i>										
Caries (nontuberculous).....	2			1			1			
Mastoid abscess.....	4	1			2		1		2	
Osteomyelitis.....	9			3	1	1	1	1	3	
Periostitis.....	5			2	1	1	1			

TABLE IX.—SHOWING DISCHARGES AND DEATHS IN HOSPITALS OF THE PANAMA CANAL, 1924—Continued.

Disease.	Total dis- charges.	Total deaths.	Employees.		Nonemployees.			Non- residents.		
			White.	Black.	White.		Black.	White.	Black.	
					Army.	Others				
<i>Diseases of the bones and of the organs of locomotion.—Continued.</i>										
Other diseases of the bones (tuberculosis excepted).	50	1	6	3	28	6	7	1		
Ankylosis.....	1			1						
Arthritis.....	60		2	7	5	8	23	15		
Synovitis.....	4			3		1				
Other diseases of the joints (tuberculosis and rheu- matism excepted).....	11		2	1	5		3			
Amputations.....	2				1		1			
Other diseases of the organs of locomotion.....	54		15	11	9	8	5	6		
<i>Malformations.</i>										
Congenital malformations (stillbirths not included)	93	4	1	12	8	26	47	3		
<i>Diseases of early infancy.</i>										
Newborn child.....	505					224	281			
Congenital debility, icterus, and sclerema.....	1	2				1	2			
Premature birth.....	1	14				4	11			
Congenital debility.....	1	3					4			
Malnutrition.....	13	9				5	16	1		
Other causes peculiar to early infancy (including various consequences of labor).....	5	9				5	9			
<i>Old age.</i>										
Senility.....	1	1				2				
Senile dementia.....	2					1	1			
<i>Affections produced by external causes.</i>										
Suicide by poisoning.....		2	1			1				
Poisoning by food.....	35		6	4	8	7	10			
Venomous bites and stings.....	2				1		1			
Snake bites.....	1				1					
Other acute poisonings.....	8	1	1	2	1	2	2	1		
Conflagration.....	1							1		
Burns (conflagration excepted).....	40	3	2	6	10	6	9	8	2	
Absorption of deleterious gases (conflagration ex- cepted).....	6	1	1	2	1	1	2			
Traumatism by firearms.....	16			4	7	3	1	1		
Traumatism by cutting or piercing instruments.....	24		2	5	6	1	6	3	1	
Traumatism by fall.....	141	2	11	12	38	25	38	19		
Traumatism by machines.....	19		2	6	4		1	6		
Traumatism by other crushings.....	81	4	9	19	28	6	14	9		
Injuries by animals.....	6			2	4					
Starvation.....	3					2		1		
Effects of heat.....	3	1		1				3		
Fractures (cause not specified).....	72	2		34	8	4	21	6	1	
Dislocations.....	9			5	2	1	1			
Sprains.....	6		1	5						
Other external violence.....	214	3	9	98	32	8	33	34	3	
<i>Ill-defined organs diseases.</i>										
Ill-defined organic disease.....	8	4	1		10					
Cause of death not specified or ill-defined.....		2					2			
Infections of undetermined origin.....	53	1	4	8	7	21	7	7		
No disease.....	365		15	19	56	144	78	51	2	
Feigned disease.....	2					1	1			
Totals.....	8,865	320	586	1,184	1,390	2,102	3,177	698	48	

TABLE X.—CONSOLIDATED HOSPITAL AND ASYLUM REPORT.

	Remaining January 1, 1924.			Admitted.			Died.			Discharged.			Transferred.			Remaining Dec. 31, 1924.		
	White American	White Foreign	Black.	White American	White Foreign.	Black.	White American	White Foreign.	Black.	White American	White Foreign.	Black.	White American	White Foreign.	Black.	White American	White Foreign.	Black.
Ancon Hospital:																		
Employees.....	12	6	74	448	48	1,028	43	2	43	437	45	985	5	12	7	15	62	
Army and Navy.....	35			1,208			11			1,164						63		
Panama Government.....					7	29						4					1	3
Charity.....	5	3	22	180	65	510	3	1	31	185	58	468	2	6	4	6	17	6
All others.....	34	47	89	1,272	749	1,907	16	21	91	1,236	729	1,805	1	3	27	53	32	73
Totals.....	86	56	185	3,117	800	3,474	38	24	166	3,022	832	3,262	8	14	76	135	46	155
Corozal Hospital:																		
Employees.....		1	13			5				24		6					1	12
Army and Navy.....		73	232	25	22	30		3	14		16	41		1	3		75	204
Panama Government.....	1	6	42	2	4	15			3	3	1	22			2		30	9
Charity.....	2	4	25	4	16	21		1	2	5	10	11				1	9	33
All others.....																		
Totals.....	3	84	312	31	42	71		4	19	32	27	80		1	5	2	94	279
Cripples.....		3	25															
Chronic medical and surgical cases.....		3	18		4	30			1		4	19					2	24
Colon Hospital:																		
Employees.....	2		4	104	8	230			5	86	7	145		1	79	3		5
Army and Navy.....	3			237			4			181						2		
Panama Government.....	2	1	8	80	14	259	3	1	9	77	13	192			61	2	1	5
Charity.....	6	5	13	301	213	690	5	4	37	259	154	496		53	157	4	7	13
All others.....																		
Totals.....	13	6	25	722	235	1,179	13	5	51	603	174	833		54	297	11	8	23
Palo Seco Leper Colony:																		
Panama Government.....		7	48		1	18			4			3					8	59
Charity.....			26			3			1			1						27
All others.....																		
Totals.....		7	74		1	21			5			4					8	86
Grand totals:																		
Employees.....	14	7	91	552	56	1,263	9	2	48	523	52	1,136		1	91	18	8	79
Army and Navy.....	38			1,470			15			1,369						66		
Panama Government.....		80	280		30	77		3	19		16	48		7	24		84	266
Charity, cripples, and chronics.....	8	16	141	271	87	818	6	2	45	265	77	704		3	79	6	21	131
All others.....	42	56	127	1,577	969	2,618	21	26	130	1,500	893	2,312		40	184	58	43	119
Totals.....	102	159	639	3,870	1,142	4,776	51	33	242	3,637	1,038	4,200		116	378	148	161	595

TABLE XI.—NUMBER OF DAYS HOSPITAL TREATMENT FURNISHED VARIOUS CLASSES OF PATIENTS AND AVERAGE NUMBER IN HOSPITAL EACH DAY, 1924.

Class of patient.	Number of days treatment.				Average number in hospital each day.			
	Ameri- can.	Foreign.	Black.	Total.	Ameri- can.	Foreign.	Black.	Total.
Ancon Hospital:								
Employees.....	5,471	1,103	26,560	33,134	14.99	3.02	72.77	90.78
Army and Navy.....	22,659			22,659	62.08			62.08
Panama Government.....		22	223	245		.06	.61	.67
Charity.....	2,488	1,317	10,465	14,270	6.82	3.61	28.67	39.10
All others.....	14,770	13,880	30,567	59,217	40.47	33.03	83.74	162.24
Totals.....	45,388	16,322	67,815	129,525	124.36	44.72	185.79	354.87
Corozal Hospital:								
Employees.....		366	4,799	5,165		1.00	13.15	14.15
Army and Navy.....	1,029			1,029	2.82			2.82
Panama Government.....		25,420	77,922	103,342		69.64	213.49	283.13
Charity.....	111	2,664	13,051	15,826	.30	7.30	35.76	43.36
All others.....	264	2,280	10,246	12,790	.72	6.25	28.07	35.04
Total (insane).....	1,404	30,730	106,018	138,152	3.84	84.19	290.47	378.50
Cripples ¹		884	8,789	9,673		2.42	24.08	26.50
Chronic medical and surgical cases.....		1,035	9,370	10,405		2.83	25.68	28.51
Colon Hospital:								
Employees.....	738	51	1,433	2,222	2.02	.14	3.93	6.09
Army and Navy.....	2,044			2,044	5.60			5.60
Panama Government.....	0	0	0	0	0	0	0	0
Charity.....	796	123	2,151	3,070	2.18	.34	5.89	8.41
All others.....	2,217	1,653	4,574	8,446	6.07	4.54	12.53	23.14
Totals.....	5,795	1,829	8,158	15,782	15.87	5.02	22.35	43.24
Palo Seco Leper Colony:								
Panama Government.....		2,646	20,094	22,740		7.25	55.05	62.30
Charity.....			9,755	9,755			26.73	26.73
Totals.....		2,646	29,849	32,495		7.25	81.78	89.03
Totals by classes:								
Employees.....	6,209	1,520	32,792	40,521	17.01	4.17	89.84	111.02
Army and Navy.....	25,732			25,732	70.50			70.50
Panama Government.....		28,088	98,239	126,327		76.95	269.15	345.10
Charity, cripples, and chronics.....	3,395	6,023	53,581	62,999	9.30	16.50	146.80	172.60
All others.....	17,251	17,815	45,387	80,453	47.26	48.81	124.35	220.42
Grand totals.....	52,587	53,446	229,999	336,032	144.07	146.43	630.14	920.64

¹ These cripples require no medical attention.

TABLE XII—REPORT OF DISPENSARIES, 1924.

EMPLOYEES TREATED IN QUARTERS.

Dispensary.	Remaining January 1, 1924.		Admitted.		Died.		Discharged.		Transferred.		Remaining December 31, 1924.	
	White.	Black.	White.	Black.	White.	Black.	White.	Black.	White.	Black.	White.	Black.
Ancon.....	2	4	968	567	.....	.....	949	546	21	22	.....	3
Balboa.....	5	.....	1,201	56	.....	.....	1,202	56	.....	.....	4	.....
Pedro Miguel.....	.....	3	183	154	.....	.....	151	149	2	8	.....	.....
Gatun.....	1	.....	107	136	.....	.....	105	132	3	3	.....	1
Colon.....	2	13	454	482	.....	.....	453	467	3	11	.....	17
Totals.....	10	20	2,913	1,395	.....	.....	2,890	1,350	29	44	4	21

Dispensary furnishing treatment.	Days treatment furnished.			Average number treated in quarters per day.		
	White.	Black.	Total.	White.	Black.	Total.
Ancon.....	2,314	2,678	4,992	6.34	7.34	13.68
Balboa.....	2,993	503	3,496	8.20	1.38	9.58
Pedro Miguel.....	576	789	1,365	1.58	2.16	3.74
Gatun.....	332	671	1,003	.91	1.84	2.75
Colon.....	1,285	4,646	5,931	3.52	12.72	16.24
Totals.....	7,500	9,287	16,787	20.55	25.44	45.99

ALL CASES TREATED BUT NOT EXCUSED FROM WORK.

Dispensary	Employees.			Nonemployees.			Total.		
	White.	Black.	Total.	White.	Black.	Total.	White.	Black.	Total.
Ancon.....	7,482	12,059	19,541	5,128	10,151	15,279	12,610	22,210	34,820
Balboa.....	12,719	15,977	28,696	17,686	5,432	23,118	30,405	21,409	51,814
Pedro Miguel.....	2,681	5,290	7,971	3,790	6,915	10,705	6,471	12,205	18,676
Gatun.....	4,859	10,339	15,198	3,543	4,916	8,459	8,402	15,255	23,657
Colon.....	5,147	14,471	19,618	6,596	12,333	18,929	11,743	26,804	38,547
Totals.....	32,888	58,136	91,024	36,743	39,747	76,490	69,631	97,883	167,514

TABLE XIII.—CONSOLIDATED ADMISSION REPORT, HOSPITALS AND DISPENSARIES, 1924.

All classes of patients.	White.	Black.	Total.
Admissions to hospitals, excluding Corozal farm, cripples, and chronic ward.....	5,008	4,745	9,753
Admission of employees, to quarters.....	2,913	1,395	4,308
Total admissions to hospitals and quarters.....	7,921	6,140	14,061
Less number of patients transferred between hospitals and from quarters to hospitals, whose admissions are duplicated in the above figures.....	214	422	636
Net admissions to hospitals and quarters.....	7,707	5,718	13,425
<i>Employees only.</i>			
Employees admitted to hospitals.....	604	1,232	1,836
Employees admitted to quarters.....	2,913	1,395	4,308
Total admissions of employees.....	3,517	2,627	6,144
Less number transferred between hospitals and from quarters to hospitals, whose admissions are duplicated in the above figures.....	46	135	181
Net admissions of employees.....	3,471	2,492	5,963
Annual admission rate per 1,000 employees to hospitals and quarters.....	1,136.17	290.78	512.95

AVERAGE NUMBER OF DAYS IN HOSPITALS AND QUARTERS FOR EACH ADMISSION, EMPLOYEES ONLY.

	White.	Black.	Total.
Hospitals:			
Ancon.....	11.66	24.72	20.51
Colon.....	6.86	6.25	6.45
Average for hospitals.....	10.77	21.37	17.95
Quarters:			
Ancon.....	2.43	4.78	3.30
Balboa.....	2.52	9.32	2.82
Pedro Miguel.....	3.20	12.77	7.62
Gatun.....	3.07	5.21	4.27
Colon.....	2.68	9.03	5.77
Average for quarters.....	2.58	7.29	4.06

TABLE XIV.—SURGICAL OPERATIONS PERFORMED.

	Ancon Hospital.		Colon Hospital.	
	Number.	Died.	Number.	Died.
Amputations:				
Arm.....	1			
Foot.....	2		1	
Thigh.....	1			
Leg.....	3			
Hand.....	2	1		
Digits, multiple.....	2		8	
Operations on bones:				
Laminectomy.....	3	2		
Resection of knee.....	1			
Wiring of fractures, simple.....	6			
Plating of fractures, simple.....	1			
Open operation of fractures.....	3			
Open reduction of fracture.....	2			
Dislocation, reduction, compound.....	1			
Cranicectomy, decompressive.....	2			
Bone splint to fracture, simple.....	1			
Fracture reduction, simple.....	15			
Adenectomy:				
Cervical.....	5			
Inguinal, single.....	127		4	
Inguinal, double.....	40			
Femoral.....	7			
Axillary.....	5			
Herniotomy:				
Inguinal, single.....	80		31	
Inguinal, double.....	14	1	4	
Ventral.....	12		2	
Strangulated.....	2		2	1
Femoral.....	3		1	
Genito-Urinary tract:				
Nephropexy.....	5			
Cystotomy.....	1		1	
Prostatectomy.....	2			
Urethrotomy, internal.....	8			
Urethrotomy, external.....	5			
Varicocele, radical cure.....	7		1	
Hydrocele, single, radical cure.....	24		4	
Hydrocele, double, radical cure.....			1	
Nephrectomy.....	1			
Orchidectomy.....	6		1	
Epididymotomy.....	63		1	
Amputation of scrotum.....	1			
Curettage uteri.....	200		9	1
Perineoplasty.....	31			
Trachelorrhaphy.....	25			
Vaginal puncture.....	4			
Circumcision.....	279		4	
Obstetrical:				
Cesarian section, abdominal.....	6	1	2	
Accouchement forceps.....	2			
High forceps.....	2		2	
Low forceps.....	9		11	
Version.....	6		2	
Perineorrhaphy.....	36			
Thorax:				
Excision of breast and axilla.....	4			
Thoracotomy.....	13	1		
Rectum:				
Hemorrhoids, radical cure.....	66		27	
Fistula in ano, excision of.....	5		3	
General:				
Thyroidectomy.....	10	1	1	
Varicose veins, excision of.....	12		2	
Mycorrhaphy.....			3	
Excision of surface neoplasms.....			1	
Bunions.....	5		1	
Operations for extensive injuries to soft parts.....			4	
Plastic operations for effects of disease.....	3			
Nerve stretching.....	2			
Laparotomy:				
For tuberculous peritonitis.....	1			
For general peritonitis.....	2	1		
Partial gastrectomy.....	1			
Intestinal obstruction.....	2	2	1	
Exploratory.....	13	1	3	

TABLE XIV.—SURGICAL OPERATIONS PERFORMED.—Continued.

	Ancon Hospital.		Colon Hospital.	
	Number.	Died.	Number.	Died.
Laparotomy—Continued:				
Gastro-enterostomy.....	7			
Gastrotomy.....	1	1		
Enterectomy.....	3	1		
Appendectomy.....	182	1	69	
Appendectomy with local peritonitis.....	10		8	
Appendectomy with general peritonitis.....	10	2	2	
Calostomy.....	1			
Cholecystotomy.....	3			
Cholecystostomy.....	14			
Cholecystectomy.....	4			
Abscess of liver, laparohepatotomy.....	2			
Abscess of liver, thoracohepatotomy.....	2			
Pan-hysterectomy.....	2		1	
Splenectomy.....	1	1		
Supravaginal hysterectomy.....	63	1	23	
Hysteromyomectomy.....	27			
Myomectomy.....	1			
Salpingectomy, single.....	3		1	
Salpingectomy, double.....	3			
Salpingo-oophorectomy.....	12		9	
Ovarian cystectomy.....	5			
Oophorectomy.....	9		2	
Suspensio-uteri.....	64		4	
Ectopic gestation.....	7		2	
Enterorrhaphy.....	2			
Lateral anastomosis intestine by suture.....	1			
Cauterizations.....	137			
Blood transfusion.....	1			
Arsphenamin, intravenous.....	2,387	1		
Salvarsan.....	675		812	
Novoarsenobenzol-Intravenous.....	474			
Major operations, various.....	11		4	
Minor operations, various.....	1,732		123	
Totals.....	7,059	19	1,198	2

TABLE XV.—OPERATIONS IN THE EYE, EAR, NOSE, AND THROAT CLINICS.

	Ancon Hospital.
Eye:	
Advancement.....	1
Capsulotomy.....	1
Cataract extractions—	
Combined.....	4
Linear.....	4
Chalazior, removal.....	19
Enucleation.....	4
Foreign body, removal.....	24
Hordeolum, incision.....	2
Iridectomy.....	6
Lachrymal operations—	
Dilation of ducts.....	3
Lid operations—	
Plastic.....	4
Excision and draining of anterior chamber.....	1
Needling.....	3
Pterygium.....	68
Tenotomy.....	2
Capsulectomy.....	1
Minor.....	6
Ear:	
Furuncle, incision.....	2
Foreign body, removal.....	6
Mastoid operations—	
Simple.....	15
Ossiculectomy.....	5
Paracentesis.....	45
Polypi, removal.....	2
Excision of cyst from ear.....	1
Others.....	2
Nose:	
Cauterization.....	2
Foreign body, removal.....	2
Polypi, removal.....	6
Rhinoplasty.....	10
Sinuses—	
Ethmoid, simple.....	2
Frontal, simple.....	4
Frontal, radical.....	1
Maxillary, puncture and irrigation.....	17
Maxillary, radical.....	3
Maxillary, drainage.....	1
Submucous resection.....	75
Turbinectomy.....	27
Minor.....	3
Other.....	1
Pharynx:	
Adenoidectomy.....	505
Peritonsillar abscess, incision.....	28
Tonsillectomy.....	877
Uvulectomy.....	2
Retropharyngeal abscess, incision.....	1
Minor.....	2
Larynx:	
Foreign body, removal.....	3
Total minor.....	11
Totals.....	2,160
Refractions.....	1,387

TABLE XVI.—COROZAL HOSPITAL, STATEMENT OF COMMITMENTS AND DISCHARGES, 1924.

COMMITMENTS.

	From Canal Zone.		From Panama.		Total.
	Male.	Female.	Male.	Female.	
First admission.....	47	30	30	17	124
Second admission.....	5	3	3	5	16
Third admission.....		2			2
Fourth admission.....				1	1
Fifth admission.....				1	1
Totals.....	52	35	33	24	144

DISCHARGES.

	Male.	Female.
Well.....	14	20
Improved.....	34	26
Unimproved.....	33	12
Totals.....	81	58

TABLE XVII.—FORCE REPORT.

	December 31, 1924.			1923.	1922.
	Gold.	Silver.	Total.		
Chief Health Officer.....	6		6	4	4
Quarantine Service.....	12	22	34	33	31
Health Officer Panama.....	9	115	124	154	151
Health Office, Colon.....	6	58	64	78	86
Ancon Hospital.....	125	206	331	352	347
Colon Hospital.....	22	35	57	54	57
Santo Tomas Hospital.....				6	6
Palo Seco Leper Colony.....	1	37	38	37	35
Zone Sanitation.....	4	114	118	96	94
Corozal Hospital.....	18	103	121	110	104
Line Dispensaries.....	11	8	19	20	17
Totals.....	214	698	912	938	932

UNIVERSITY OF FLORIDA



3 1262 08896 2542